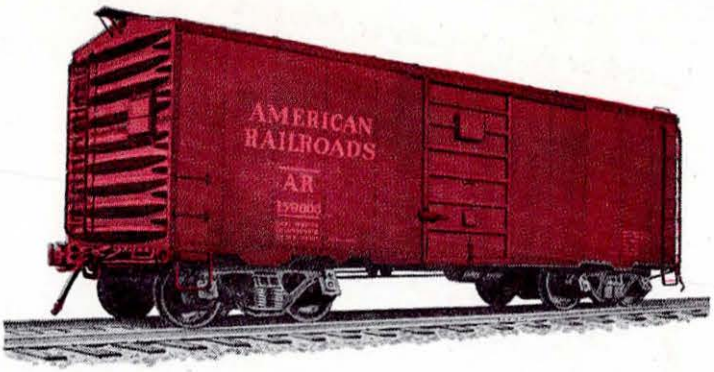
FOUNDED IN 18

RAILWAY AG

MAY 15, 194



The most popular car in America!

YES—the familiar, hard-working railroad freight car!

You almost live out of it! You depend upon it for virtually everything you eat, everything you wear, everything you use.

Freight cars are owned by many different railroads all over the country—and yet all of them can run on any railroad, carrying anything, anywhere, in any season.

Take this box car, for example. The brother of every other American freight car—it has interchangeable wheels, axles, trucks, brakes, draft gear and couplings. It fits into any train, and can be repaired with standard parts at any railroad shop in America.

This universal interchange of free-wheeling freight cars is the basis of the mass transportation that makes possible the marvel of American large-scale production. It is the very foundation of our system of marketing, which gives the American consumer the widest possible choice in the things he buys.

These things could not have been achieved—and they could not be maintained today—without the cooperation of railroads which, while competing vigorously with one another, also work together through such organizations as their mutual agency, the Association of American Railroads. And today—as in the past—they are engaged in a wide-range program of research and development in equipment, materials and methods, to help maintain American railroads as the most economical, the most efficient, the safest mass transportation system in the world.

ASSOCIATION OF AMERICAN RAILROADS

WASHINGTON 6, D. C.

WHAT CAUSED

461 Accidents *

DUE TO BRAKE RIGGING FAILURES

IN 1946?

1% —Miscellaneous

3% —Pawl or rachet failure

3% —Brake shoe worn, broken or missing

3% —Brake chains or bolts breaking or giving away

5% —Brake chains kinking, twisting, overlapping or too long

8% —Brake rod or shaft broken or defective

14% —Insufficient braking power

62% —Failures of brake beams, brake beam hangers, and/or failures or lack of brake beam supports resulting in dropped brake rigging

UNIT TRUCKS ARE DESIGNED TO ELIMINATE THE RISK OF THIS TYPE OF ACCIDENT

*STANDARD RAILWAY DIGEST SERVICE
from Bureau of Transport Economics & Statistics

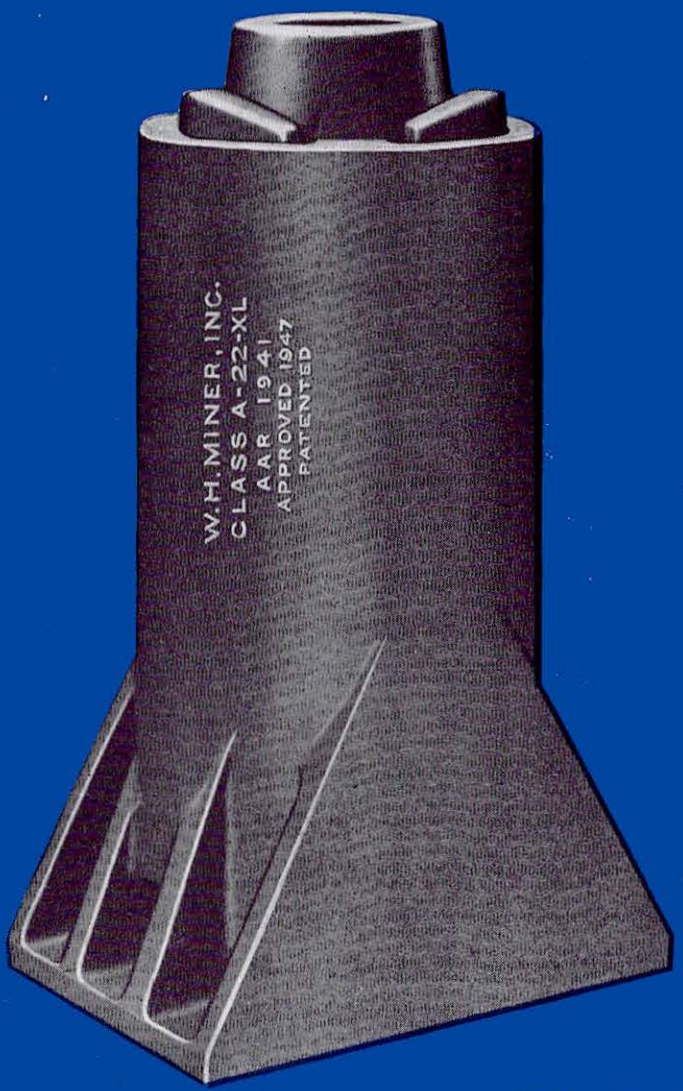
UNIT TRUCK CORPORATION . . . . . NEW YORK

Published weekly by Simmons-Boardman Publishing Corporation, Orange, Conn. Executive Offices, 30 Church Street, New York 7, N. Y. Entered as second class matter at Orange, Conn., under the act of March 3, 1879. Subscription price $6.00 for one year. U. S. and Canada. Single copies, 50 cents each. Vol. 121, No. 20.

MINER

Class A-22-XL

GREATER
CAPACITY
•
LESS
WEIGHT
•
NO
BOLT



W. H. MINER, INC. CHICAGO

THE RALSTON STEEL CAR CO
BUILDERS
COLUMBUS, O.

PULLMAN-STANDARD CAR MANUFACTURING CO
Built by Pullman-Standard

St. Louis Car Company

PRESSED STEEL CAR COMPANY, INC.

American Car and Foundry Co

Virginia Bridge

MAGOR

Budd

YOCAR

QUALITY SERVICE
GSCCO
STEEL CARS

GATX
GENERAL AMERICAN

AMERICAN RAILWAY CAR INSTITUTE

19 Rector Street, New York 6, New York

. . TO OUT-MIRACLE THE MIRACLE OF TODAY!

Within two short decades America's railroads have faced three great crises—depression, war, and reconversion.

Through them all, they have *delivered the goods.*

Today, with 600,000 fewer freight cars, railroads are handling 45 per cent more freight than in the peak year of 1929.

Truly a miracle of transportation! But a miracle that *could* be overshadowed if railroads were provided the two things they really need—more new equipment, and adequate rates.

• • •

The Car Builders, producers of freight cars for the nation's railroads and *the sole source of new cars for more than 80 per cent of the Class I roads,* are cutting their way through many obstacles to meet this equipment need.

Right now, every 90 seconds of every work day, a sturdy new freight car rolls off an assembly track in one of the Car Builders' plants... ready to help carry the nation's load.

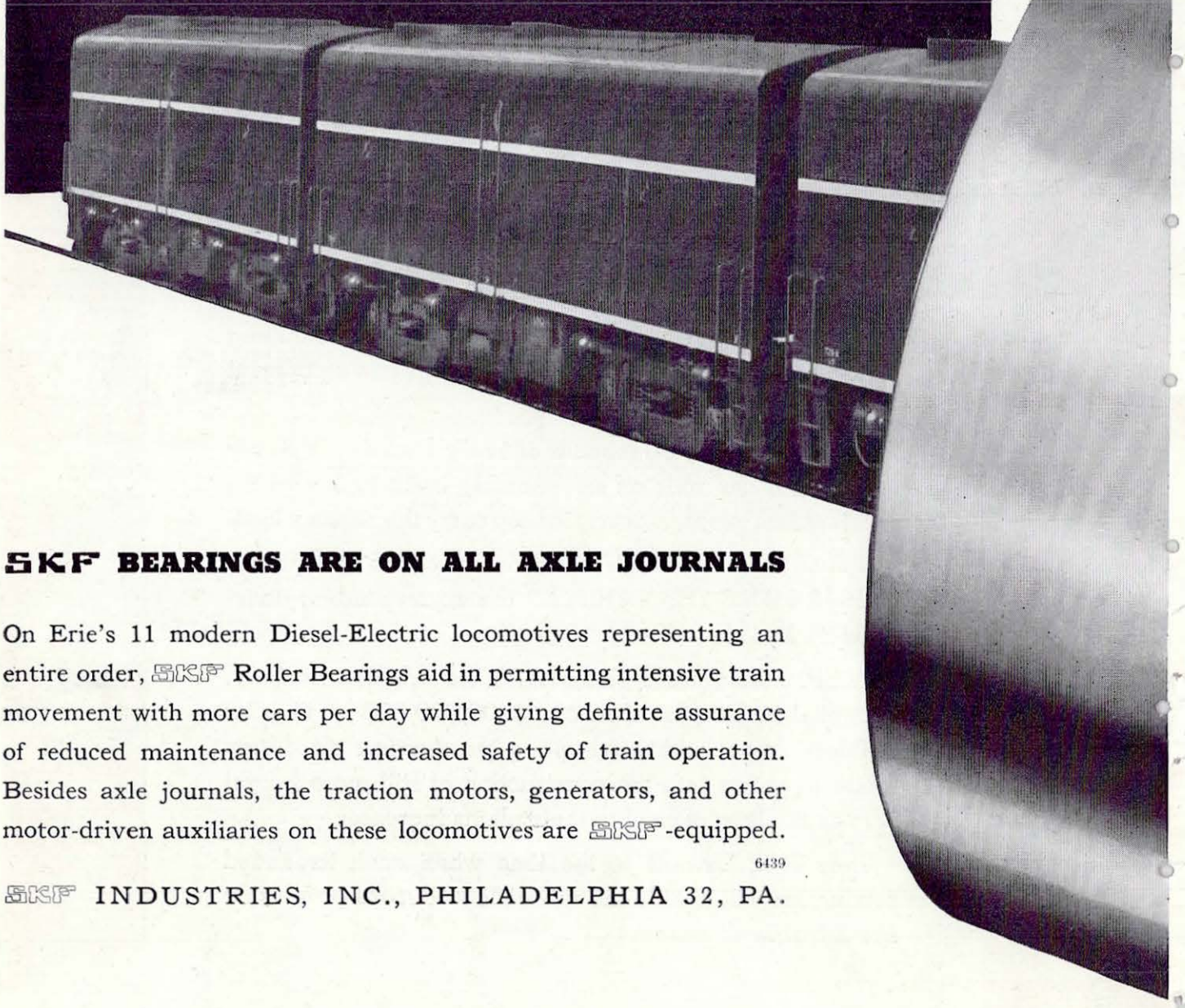
Deliveries to America's railroads during the first quarter of 1948 MORE THAN TRIPLED the corresponding deliveries for 1947!

With 19 freight car plants... 29 car erection tracks... a capital investment of nearly $300,000,000 . . . the Car Builders' have additional *mass production facilities* ready to swing into the construction of still more freight cars as the flow of steel to their plants increases.

They look forward to the time when such expanded production will enable the railroads *to out-miracle even the miracle of today.*

The Entire Order 100% SKF-Equipped!

11 NEW 6,000 H.P. FREIGHT DIESELS FOR THE ERIE



SKF BEARINGS ARE ON ALL AXLE JOURNALS

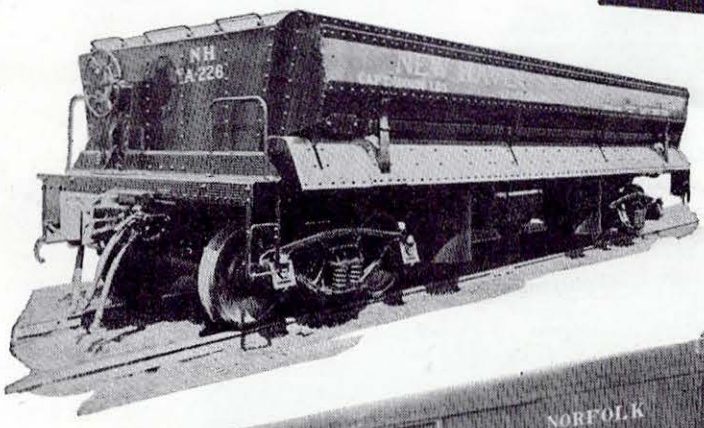
On Erie's 11 modern Diesel-Electric locomotives representing an entire order, SKF Roller Bearings aid in permitting intensive train movement with more cars per day while giving definite assurance of reduced maintenance and increased safety of train operation. Besides axle journals, the traction motors, generators, and other motor-driven auxiliaries on these locomotives are SKF-equipped.

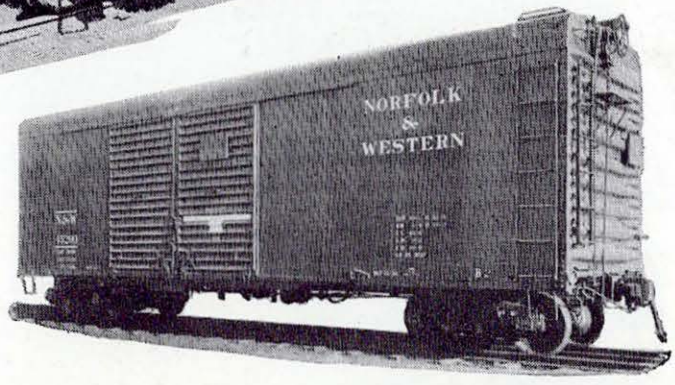
6439

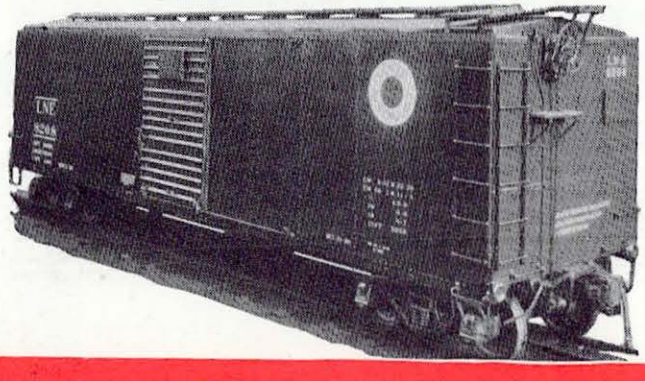
SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

SKF
BALL AND ROLLER
BEARINGS

Magor





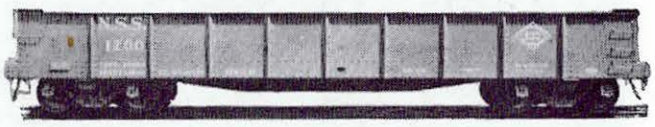


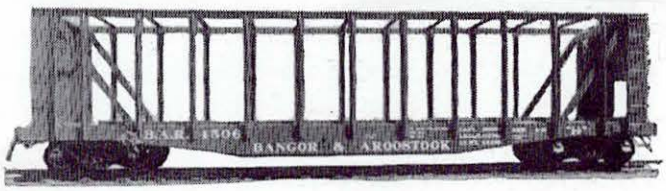
MAGOR CAR CO

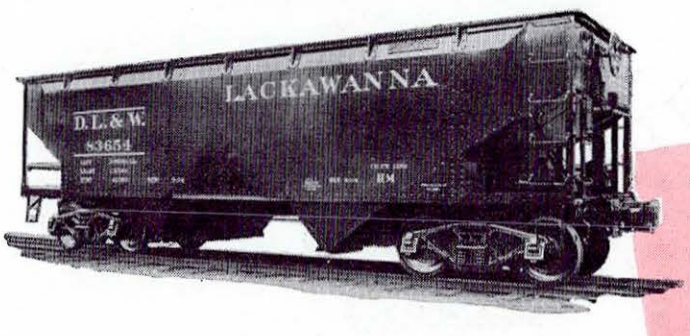
FOR

DESIGN AND MANUFACTURE FREIGHT CARS

AUTOMATIC AIR DUMP CARS





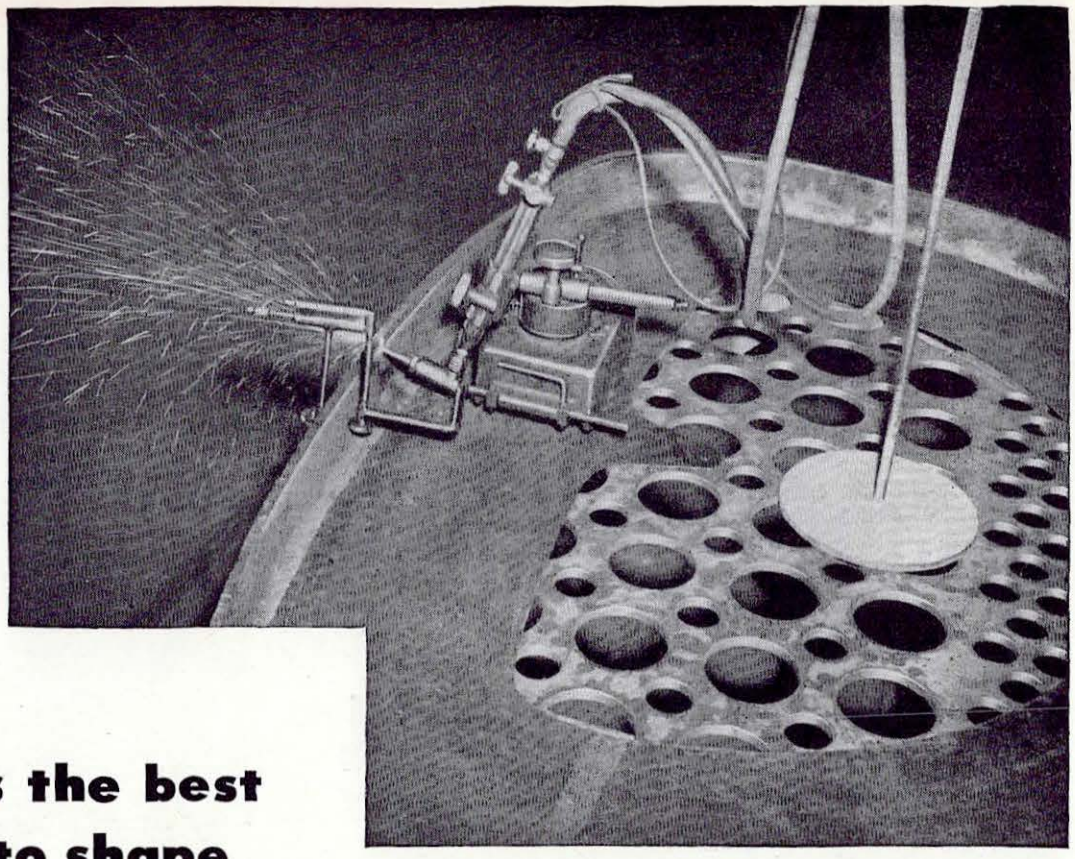


Cars Purchased from Magor Reassure Their Owners—They Are Revenue-Producers

R P O R A T I O N

50 Church Street

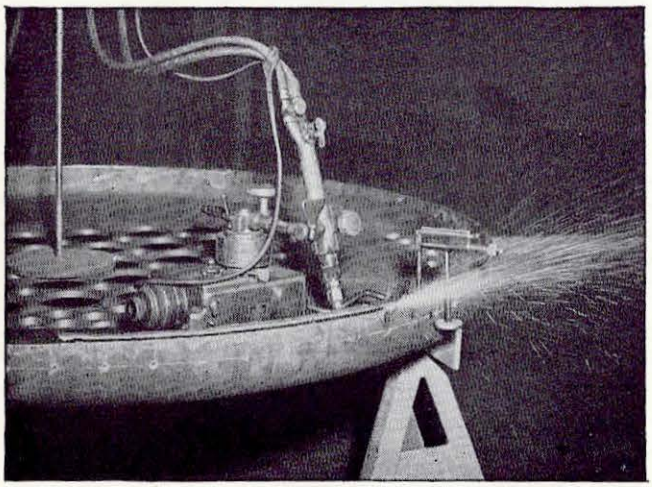
New York 7, N. Y.



what's the best way to shape FLUE SHEETS?

machine gas cutting?

mechanical shearing and beveling?



Airco technical men, working in close cooperation with major railroads, observed costs and results of both methods. In one instance they found oxyacetylene machine gas cutting produced savings of more than $5.00 on each flue sheet. Flame-cut edges were completely satisfactory for welding or calking without additional plate edge preparation.

For this work, an Airco No. 10 Radiagraph, shown here cutting a back flue sheet, was used. When not in use in the boiler shop, the light weight, portable Airco No. 10 Radiagraph is easily transported and set up for other cutting jobs.

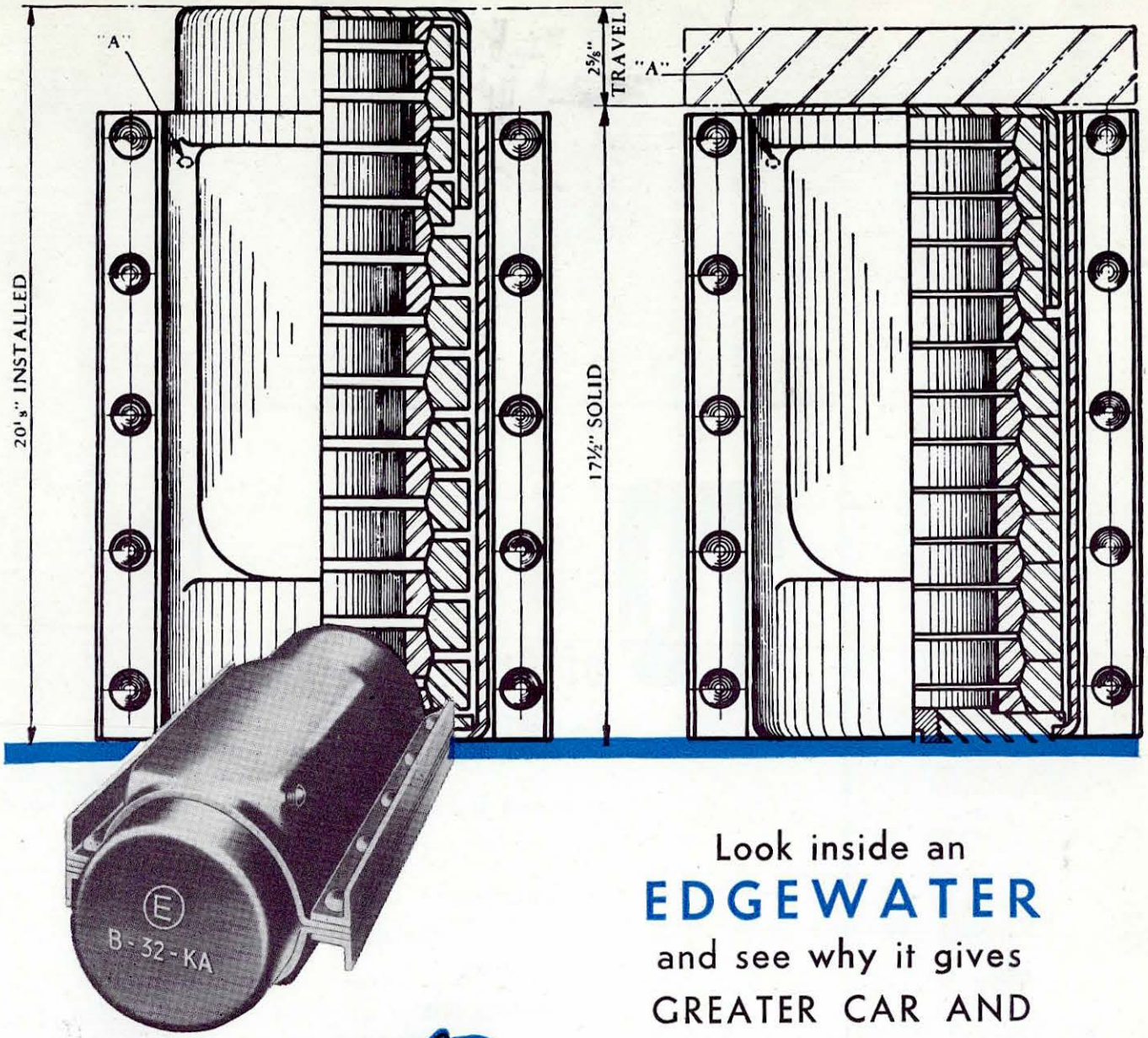
Railroad Technical Service and machine gas cutting are two topics discussed in the 44-page booklet "Oxyacetylene Flame Processes and Arc Welding in Railroad Mechanical Operations." If you would like a free copy of this interesting, illustrated booklet, address Dept. **RA,** Air Reduction, 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, Houston 1, Texas. On West Coast: Air Reduction Pacific Company, San Francisco 4, Calif.

Costs Come Down Under the Airco Plan

AIRCO **AIR REDUCTION**

Offices in All Principal Cities

Headquarters for Oxygen, Acetylene and other Gases... Carbide... Gas Welding and Cutting Machines, Apparatus and Supplies... Arc Welders, Electrodes and Accessories



Look inside an

EDGEWATER

and see why it gives

GREATER CAR AND LADING PROTECTION

Edgewater

B - 32 KA

RING SPRING DRAFT GEAR

The principle of the Edgewater Draft Gear is simplicity itself. Inside are two nests of ring springs; one stretches under the pressure; the other compresses. Both have the dual purpose of supplying frictional resistance and returning the gear to rest position the instant pressure is released. To re-emphasize, one part performs *both functions!*

This distinguishing feature makes the Edgewater Draft Gear different from any other. It is tried and proved. Laboratory tests and service records assure you of trouble-free long life and greater protection when you install Edgewaters in your freight cars.

Edgewater Draft Gears fit standard draft gear pockets and never need lubrication attention.

EDGEWATER STEEL COMPANY

PITTSBURGH 30, PA.

Atlanta, Baltimore, Boston, Cleveland, Chicago, Kansas City, Louisville, New York, Philadelphia, Seattle, St. Paul, St. Louis, San Francisco, Washington

70 of America's leading roads

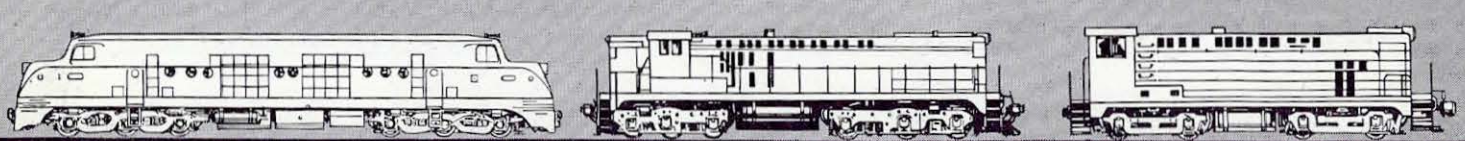
now use Baldwin Diesels.
A type for every purpose:

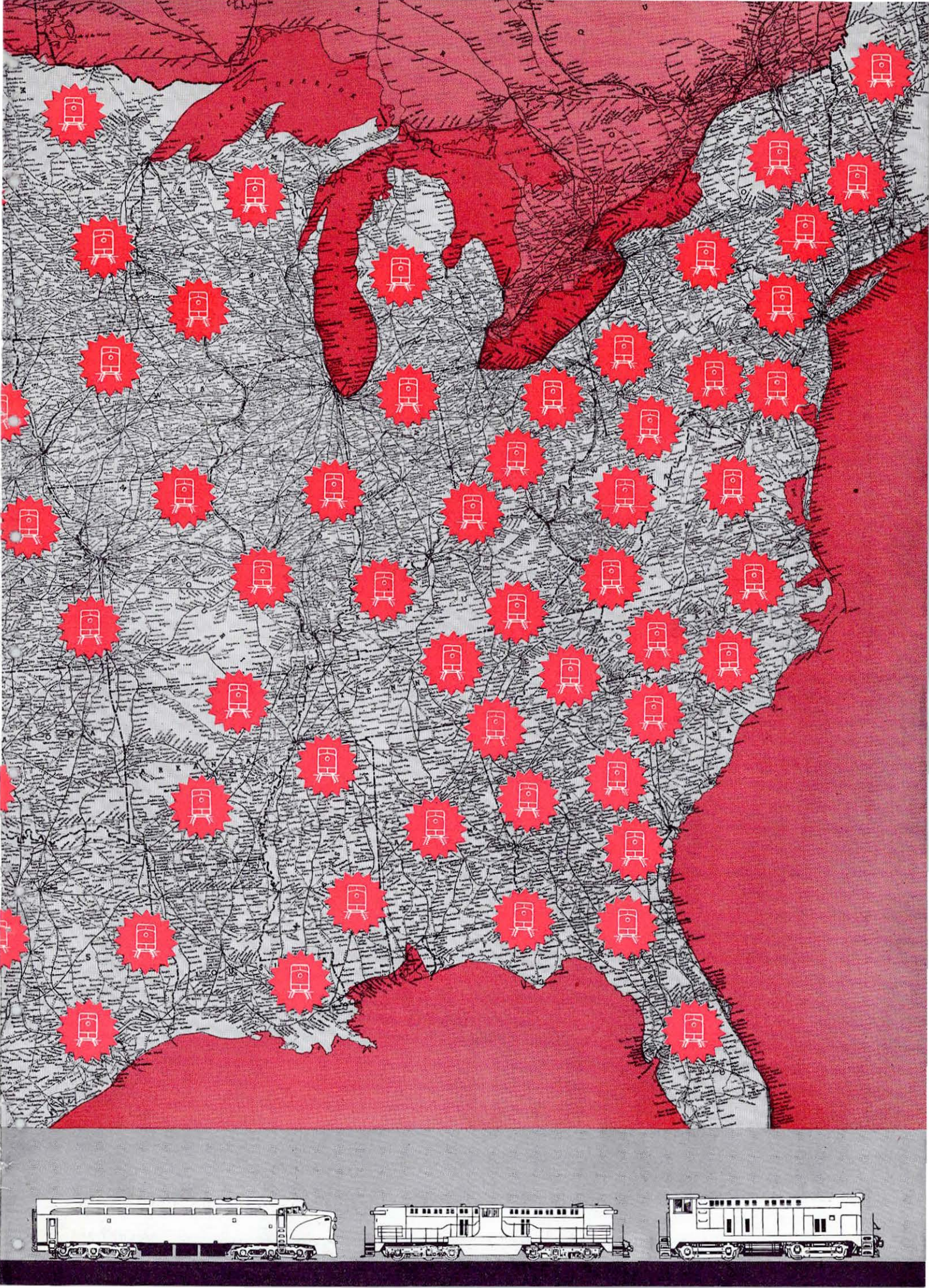
SWITCHING
ROAD SWITCHING
TRANSFER
BRANCH LINE
MAIN LINE PASSENGER
MAIN LINE FREIGHT

660-HP TO 6000-HP

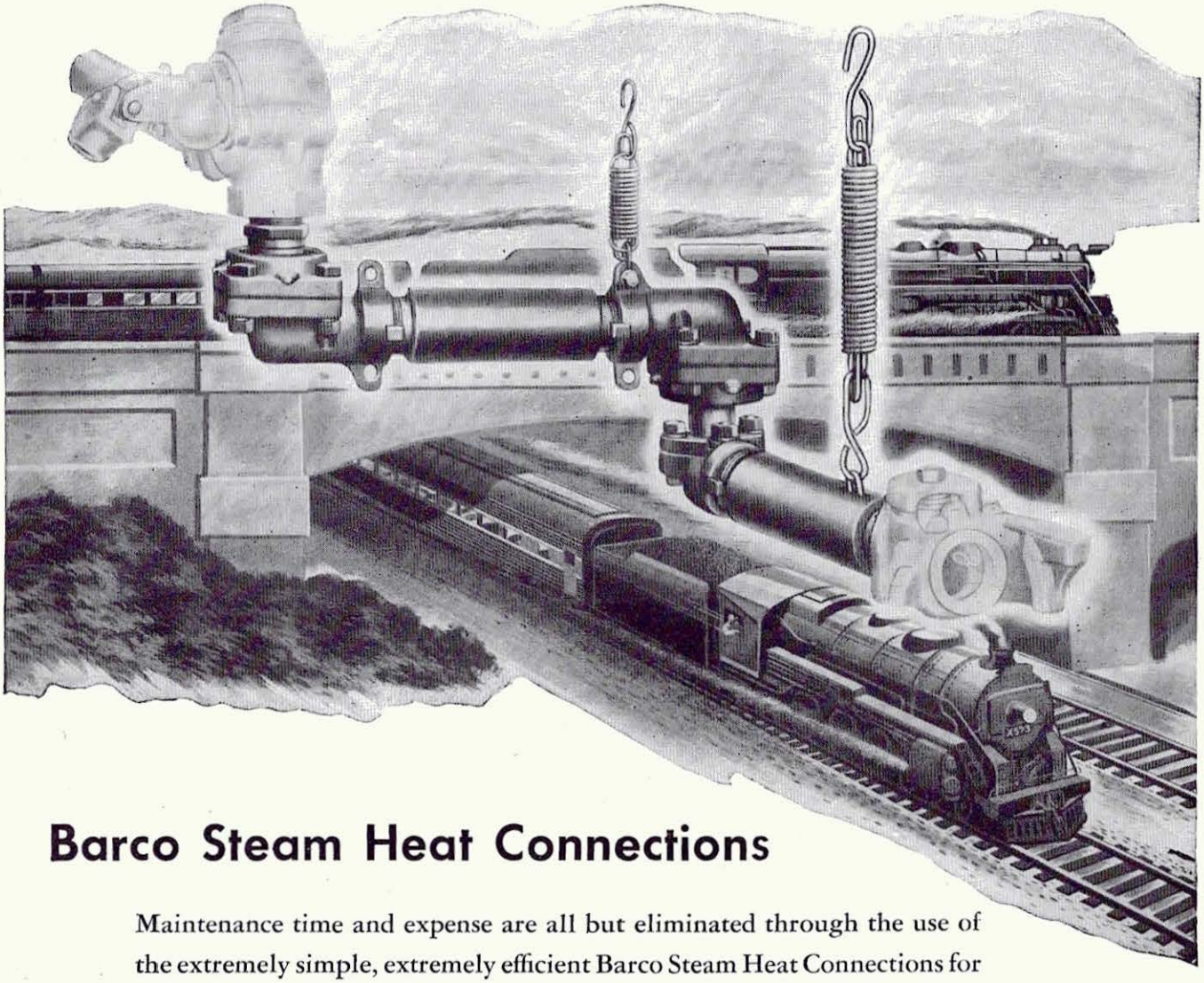
BALDWIN

The Baldwin Locomotive Works, Philadelphia 42, Pa., U. S. A. Offices: Birmingham, Boston, Chicago, Cleveland, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Washington. In Canada: Canadian Locomotive Co., Ltd., Kingston, Ontario.





PREFERRED
BY THE NATION'S RAILROADS



Barco Steam Heat Connections

Maintenance time and expense are all but eliminated through the use of the extremely simple, extremely efficient Barco Steam Heat Connections for passenger cars and rear of tender.

There are fewer joints, gaskets, springs and wearing parts, yet this tough lightweight Barco will not fail or blowout. Easy to install. Easy to repair, if necessary, because parts are bolted together. No rethreading required. Complete details on request.

BARCO MANUFACTURING COMPANY

Free Enterprise—The Cornerstone of American Prosperity

1800 WINNEMAC AVENUE, CHICAGO 40, ILLINOIS • *IN CANADA:* THE HOLDEN CO., LTD., MONTREAL, CAN.

three OUTSTANDING PRODUCTS

FOR improved FREIGHT PROGRESS . . .

NO. 1

The "Symington"* Composite Articulated JOURNAL BOX LID

Hinge lug wear reduced by equipping the torsion spring with a roller of adequate diameter and width which bears against the hinge lug.

Housing and pin wear decreased by lid pin bearing surfaces of large area.

Lid wear minimized by light weight construction and center pressure action, which insures tight fit and prevents vibration.

Awarded AAR Approval Certificate No. 1.

The "Symington"* JOURNAL BOX HINGE LUG Wear Plate and Self-Adjusting Bushing

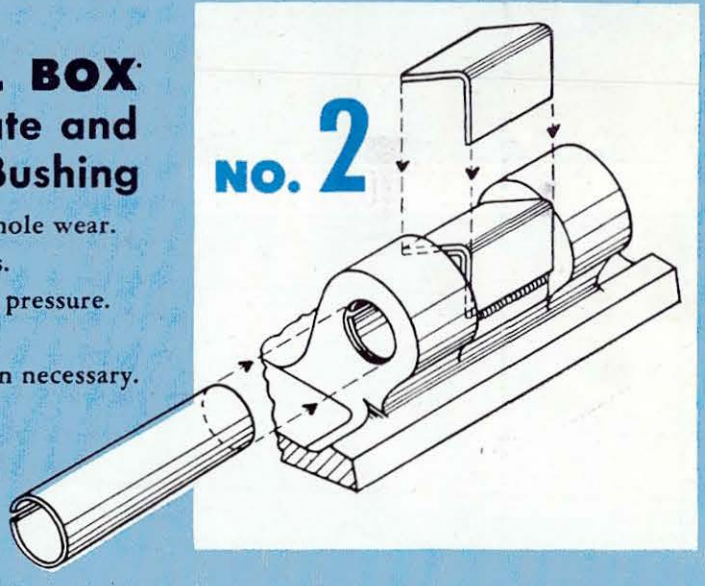
Minimize hinge lug and pin hole wear.

Reduce journal box lid losses.

Maintain effective lid closing pressure.

Provide easier lid operation.

Easy to apply and renew when necessary.



NO. 2

NO. 3

The "Symington"* Constant Contact RESILIENT SIDE BEARING

Stops car body roll before it can develop excessive side bearing pressure.

Prevents truck shimmying or nosing.

Eliminates side bearing shocks.

Contributes to longer life of equipment.

Helps protect lading.

Fits AAR Standard side bearing base.

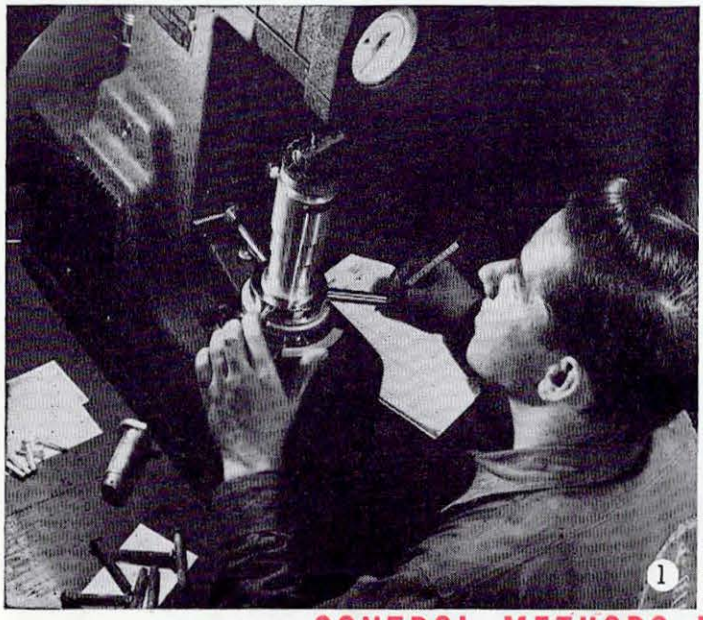
* REG. U. S. PAT. OFF.

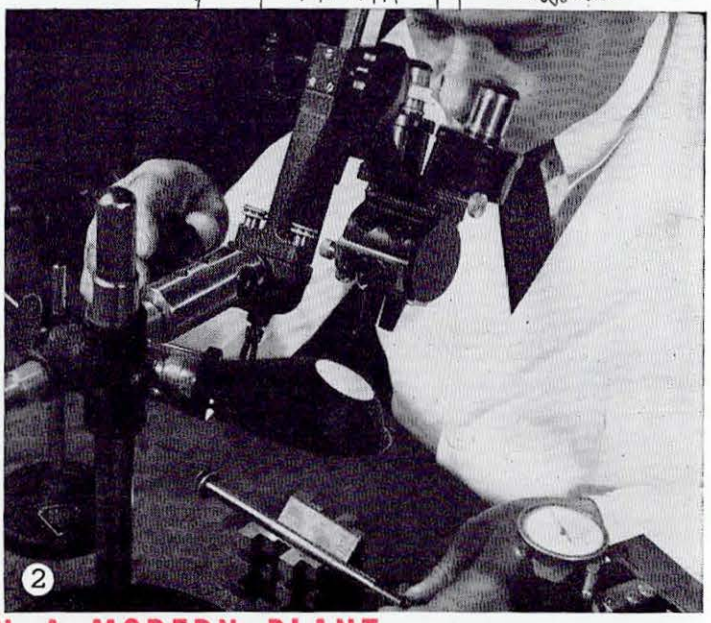
THE SYMINGTON-GOULD CORPORATION

Works: ROCHESTER & DEPEW, NEW YORK

New York • Chicago • St. Louis • Boston • San Francisco • *In Canada:* ADANAC SUPPLIES LTD., Montreal, Que.

Speaking of





CONTROL METHODS IN A MODERN PLANT

The illustrations above show some of the painstaking methods used to insure the uniformity and accuracy of Industrial Fasteners made under the modern production methods employed in the industry. (1) Checking surface hardness. (2) Inspecting metal structure. (3) Close check of dimensions during manufacture insures interchangeability. (4) Final inspection before shipment.

AMERICAN INSTITUTE OF

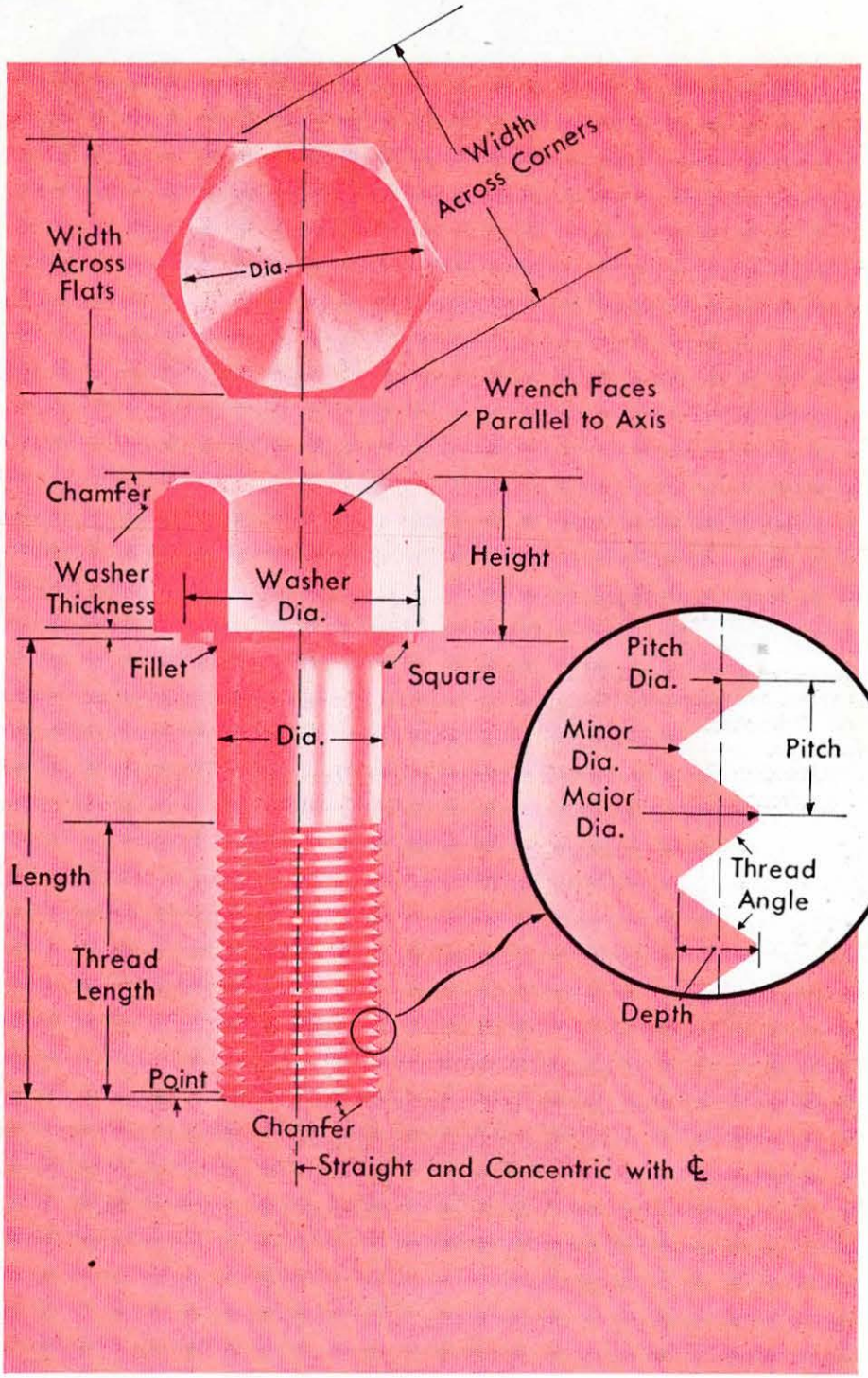
1550 HANNA BUILDING

CONTROLLED DIMENSIONS

here are the dimensions

FASTENERS MANUFACTURERS

keep within close tolerances



In the manufacture of Industrial Fasteners (bolts, nuts, rivets, screws), tolerances in thousandths of an inch are common practice. Such precision makes possible complete interchangeability of parts and accuracy of fits. Made in lots of hundreds of thousands by precision mass-production methods, the modern Industrial Fastener is produced at a cost amazingly low for an article of such closely controlled quality. ● Truly the modern Fastener is an engineering masterpiece!

BOLT, NUT AND RIVET MANUFACTURERS

CLEVELAND 15, OHIO

DECIMALS TO SPECIFY LEGAL MILK OR TO MAKE WOOD PRESERVATION SURE

IN MOST AMERICAN CITIES it's against the law to sell milk that doesn't meet certain butterfat and bacteria-count standards as determined by laboratory checks. By this means, the public makes sure of the food values for which it pays and on which proper nourishment of our children depends.

You can assure your investment in wood preservation just as accurately and just about as easily as the Board of Health inspects milk every day. Simply specify a preservative with known and tested characteristics which cannot vary because the preservative is a chemically defined substance, recognized by proper laboratory procedures.

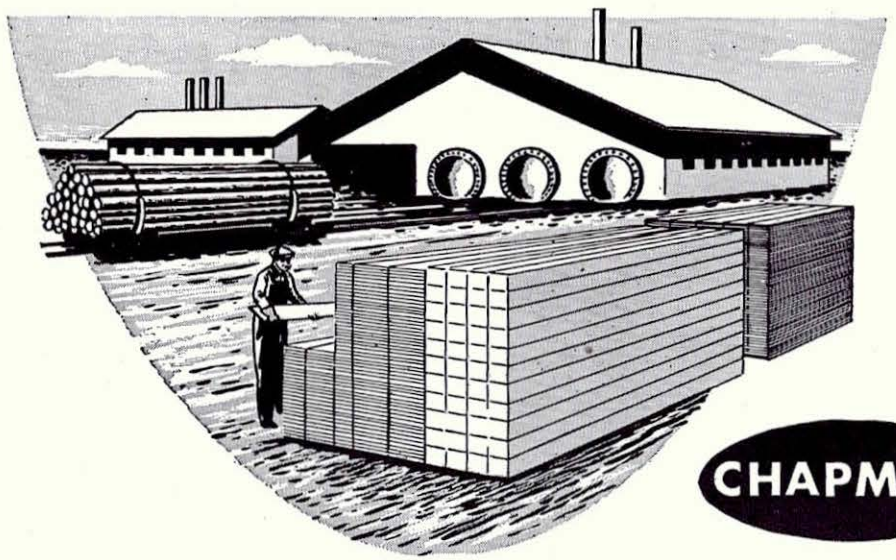
Chapman Penta Preservative is exactly that. Its active ingredient is pentachlorophenol, which the chemist can identify and measure. It is the same today as it was yesterday or years ago when the first exposure tests were begun. The Penta you buy tomorrow will produce exactly the same results as Penta of any previous year because it is forever the same identical substance.

Your treating plant has always been able to check and make sure of adequate penetration. With Chapman Penta Preservative, treaters can be equally sure of adequate toxicity. Treated wood is clean; men never object to handling or working with it. Cost is no greater—sometimes it is less—than commonly used treatments not affording these advantages.

Specify Chapman Penta Preservative on your next order for poles, timber or lumber. Or, if you want more facts and figures, write or wire for the full story.

CHAPMAN PENTA PRESERVATIVE

containing pentachlorophenol, product of The Dow Chemical Company



CHAPMAN

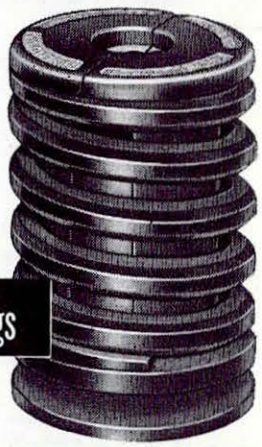
CHAPMAN CHEMICAL COMPANY ★ 333 North Michigan Avenue, Chicago 1, Illinois

WESTINGHOUSE Friction Draft Gear • Certified A.A.R.

MAXIMUM PROTECTION

FOR CARS and LADING

Cardwell and Westinghouse shock-absorbing devices protect rolling stock against excessive horizontal, vertical and lateral forces. They are designed with a high factor of safety, resulting in capacities well above the requirements.

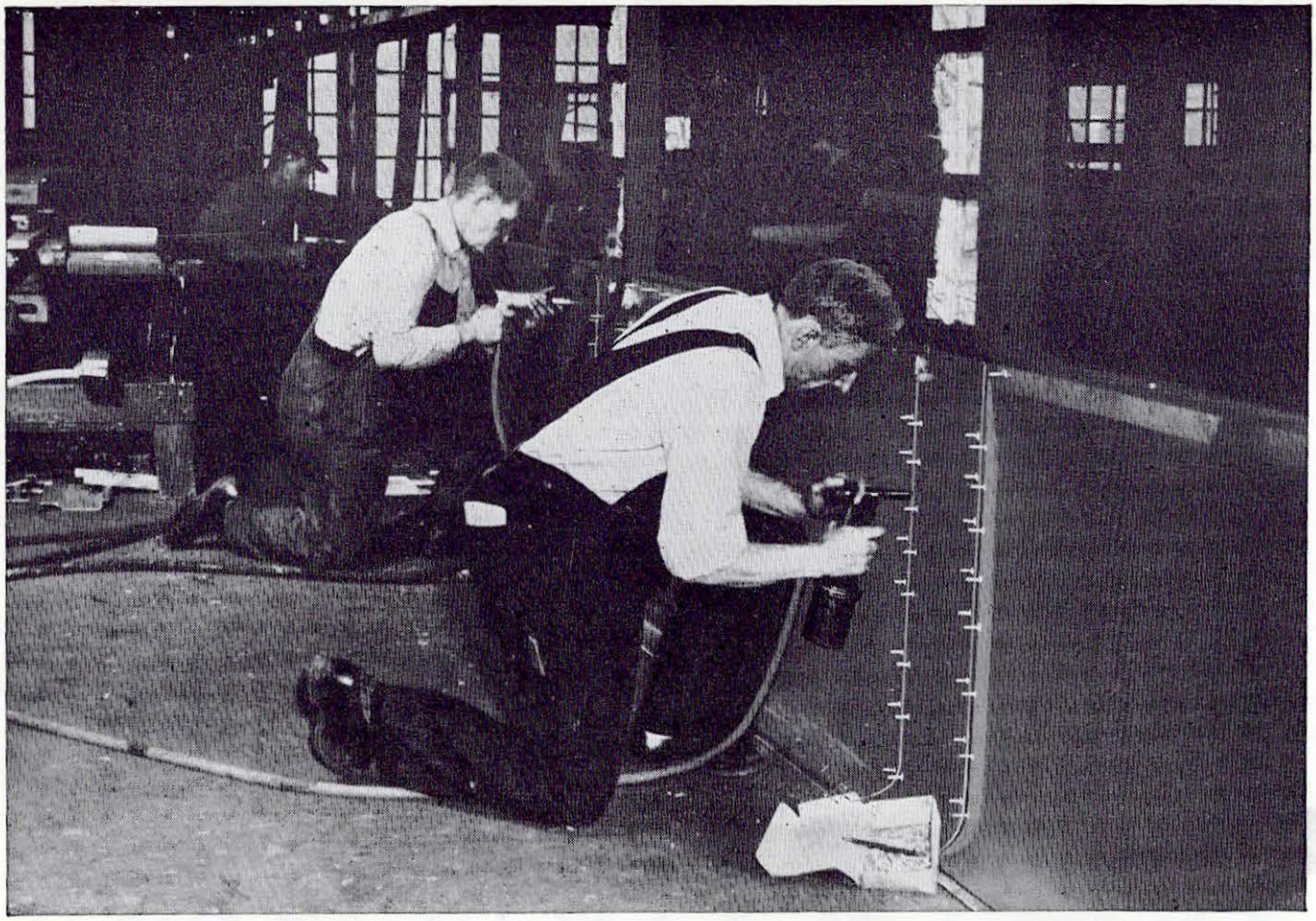


CARDWELL Friction Bolster Spring for A.A.R. and Long-Travel Springs

Over 98% of the cars in freight carrying service are A.A.R. construction and over 96% have Friction Draft Gears.

Cardwell Westinghouse Co., Chicago
Canadian Cardwell Co., Ltd., Montreal

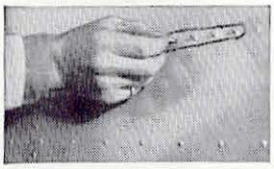
2620



Cherry Rivets speed the interior assembly-work on Canadian Pacific first-class coaches.

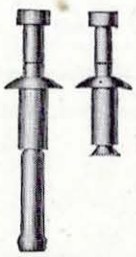
CHERRY BLIND RIVETS make the hard jobs easy

WITH CHERRY RIVETS no washers, locking devices, or nuts need be handled and handled again in time-consuming production steps. Cherry Rivets provide a fast, sure fastening method that has made them a production line 'standard' in most railroad shops. Used in the assembly of panels, partitions, skirting, air-conditioning ducts, to anchor Keystone flooring, etc. . . where screws might work loose or strip.



Simply insert the rivets in the drilled holes. Engage the pulling head of the rivet and actuate the gun.

COMPARABLE TO SOLID RIVETS. Self-Plugging Cherry Rivets have shear values comparable to solid rivets. Excellent hole-filling qualities due to shank expansion and the high-clinch action caused by the tulip head formed on the blind side of the work, give Cherry Riveted joints exceptional resistance to vibrational stresses.



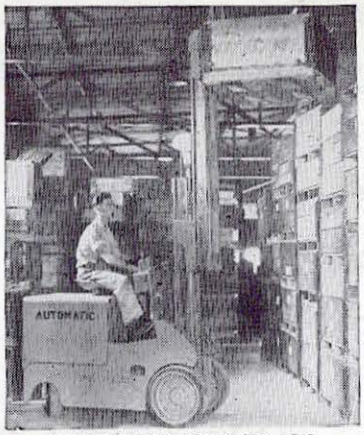
UNEQUALED FOR MAINTENANCE. In maintenance work, Cherry Rivets stand alone . . . unequaled. Easy to install. Easy to remove. Easy to replace. Whether for assembly or repair, Cherry Rivets enhance the appearance of any job. Try Cherry Rivets today and gain years of less-expensive, better-looking assembly work.

Cherry Rivets are made from aluminum alloy, steel, or monel. Standard rivets come in five diameters and two head styles. There is a wide range of grip lengths. Special heads, diameters, grip lengths, and alloys can be made to order. WRITE US TODAY FOR FURTHER INFORMATION. BOOKLET MAILED ON REQUEST. ADDRESS DEPT. E-342, CHERRY RIVET COMPANY, 231 WINSTON STREET, LOS ANGELES 13, CALIFORNIA.

CHERRY RIVETS. THEIR MANUFACTURE & APPLICATION ARE COVERED BY U. S. PATENTS ISSUED & PENDING

Cherry Rivet
Company
LOS ANGELES 13, CALIFORNIA

CHERRY RIVETS ARE APPROVED BY CIVIL AERONAUTICS AUTHORITY AND UNDERWRITERS' LABORATORIES, INC.



AUTOMATIC FORK TRUCK

AUTOMATIC TRANSPORTER

Battery Electric Trucks and EXIDE-IRONCLAD BATTERIES

Speed production . . . cut material handling costs

There are no material handling problems . . . and no bottlenecks . . . where time-saving, cost-cutting Battery Electric Trucks are on the job. Freight cars and trucks are more quickly loaded and unloaded. Goods in process move quietly and smoothly through the plant. Finished products are hauled safely to warehouse and tiered ceiling high.

Battery Electric Trucks lift, haul and stack loads of every kind and size. They assure smooth starting, powerful acceleration, accurate spotting and easy control. They withstand years of use and abuse . . . over 90% of those sold in the past 20 years are still in service. And the husky, Exide-Ironclad Batteries that give them power provide dependable full-shift performance, with long life and ease of maintenance.

Improve your material handling operations. Start Battery Electric Trucks and Exide-Ironclad Batteries working and saving for you.

Write for further particulars and FREE copy of Exide-Ironclad Topics, which covers latest developments in material handling and shows actual case histories.

DEPENDABLE POWER

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

Modern MAGNUS BEARINGS *Improved*

"TWINPLEX" ALARM JOURNAL BEARING

The "Twinplex" Alarm Journal Bearing is a certain safeguard against failures resulting from overheated journals.

It is a standard A. A. R. bearing equipped with two brass tubes, each having a small orifice sealed with fusible metal which melts at 320 deg. F. At this temperature, one tube releases a penetrating odor, and the other a dense white smoke, both continuing for about 8 minutes.

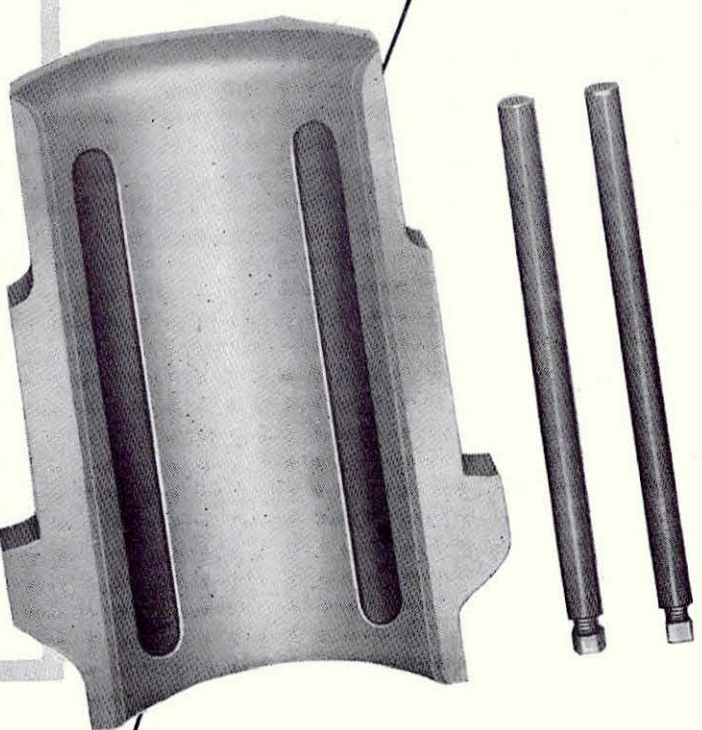
This device has proven highly effective under actual service conditions.

Gives *"Two-Way"* ADVANCE WARNING

—of High Temperatures in Journal Box

1. a warning you can SMELL

2. a warning you can SEE



SATCO Bearing Metal

MODERN HEAVY DUTY BEARINGS

MAGNUS METAL CORPORATION

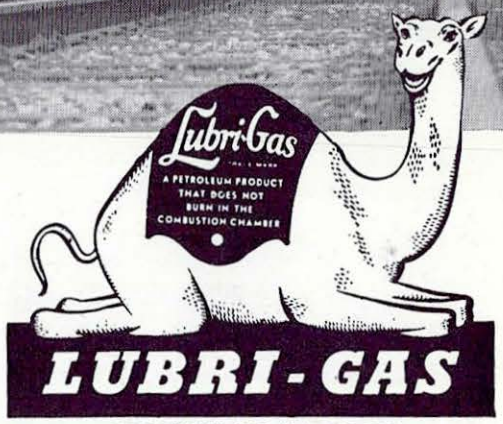
CHICAGO NEW YORK

2180

What do you know

about Diesel lubricants and fuels?

Engineers know that gasoline and Diesel fuels and lubricants are the life blood of their engines. But there's more to the subject than that. And it's easy for you to learn more by sending today for our "File Folder," which tells about the superior quality and many uses of LUBRI-GAS, the perfect lubricant; it contains complete technical data and information about LUBRI-GAS treated fuels for locomotive, automotive, stationary, and marine engines. Fill out the coupon below and mail it at once.



TRADEMARK REG U.S. PAT OFF

TO RAILWAY MANAGEMENT:

For more than 30 years LUBRI-GAS has been producing more power, economically, for large industrial and commercial users of gasoline and Diesel engines. It will give you more profitable operation in every combustion engine in your entire system.

You know that education and experience are invaluable tools by which your employees can help keep down operating costs. To help you tell your engineers, mechanics, maintenance and operating men how to perfectly lubricate your gasoline and Diesel engines, send us the complete roster of their names and we will provide them individually with copies of our comprehensive "File Folder" with its valuable instructions on this vital subject. Write us today for this educational service.

LUBRI-GAS INTERNATIONAL, INC.

221 North La Salle Street, Chicago 1, Illinois

(C O U P O N)

LUBRI-GAS, Dept. R-A
221 North La Salle Street
Chicago 1, Illinois

Send me your complete File Folder on LUBRI-GAS

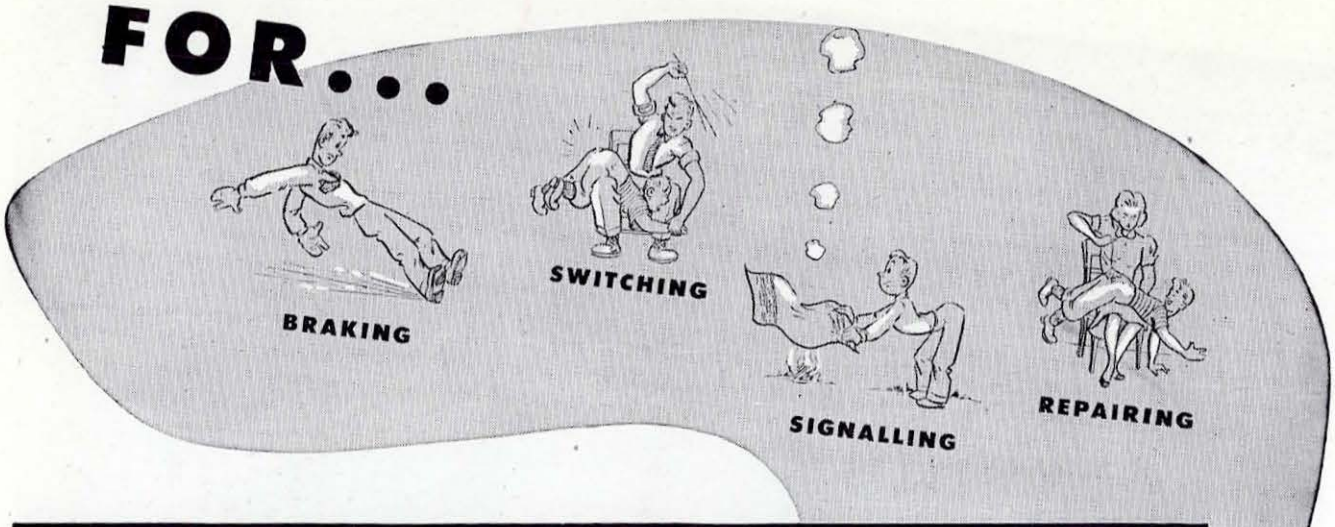
NAME:.....

OCCUPATION:.....

COMPANY:.....

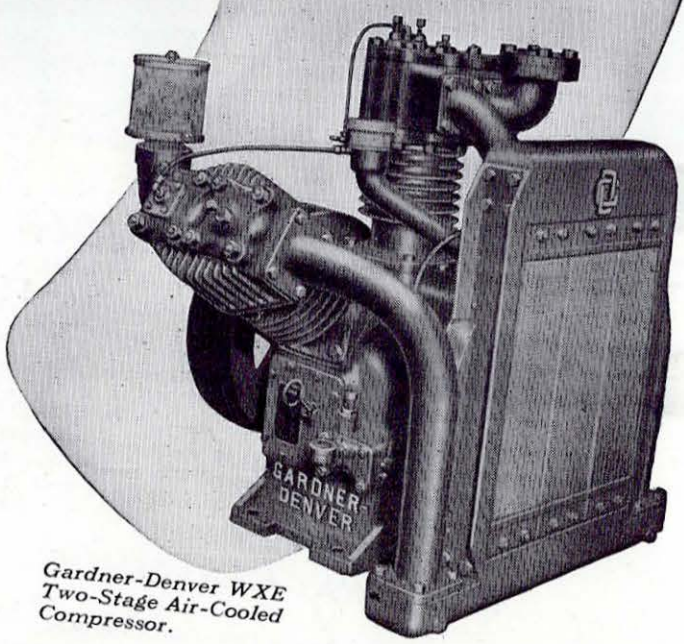
ADDRESS:.....

FOR...



you'll want a GARDNER-DENVER WXE AIR COOLED COMPRESSOR

Wherever you need a dependable supply of air, you'll want a Gardner-Denver WXE Air-Cooled Compressor. Widely used in air brake service, WXE Compressors are famous, too, for their faithful unfaltering performance at lonely signal blocks and switching stations. And when trains require overhauling, these reliable compressors help speed up shop work.



Gardner-Denver WXE Two-Stage Air-Cooled Compressor.

OTHER WXE FEATURES YOU'LL LIKE:

* *Castings of wear-defying GarDurloy assure extra strength and hardness.*
* *Air-cushioned Duo-Plate valves provide insurance against waste from air leakage.*
* *Accurate and reliable pressure control.*
* *Heavy circumferential cooling fins eliminate cylinder distortion, provide extra strength and cooling surface.*
* *Crankshaft mounted on Timken tapered roller main bearings.*

For complete information, write Gardner-Denver Company, Quincy, Illinois

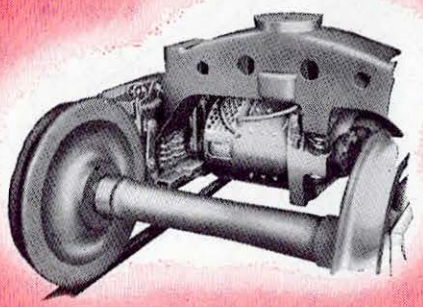
GARDNER-DENVER

SINCE 1859

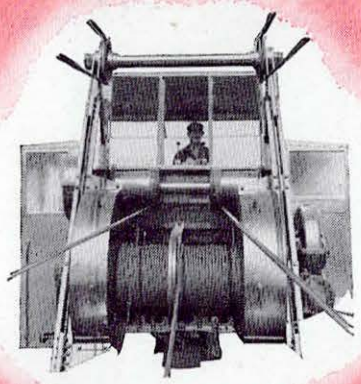
BROWNHOIST DIESEL ELECTRIC LOCOMOTIVE-CRANE

Sets a new high in crane efficiency and economy.

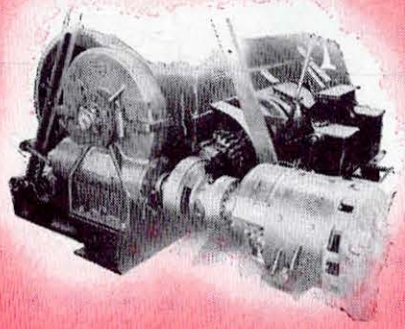
... AND HERE ARE 4 REASONS WHY



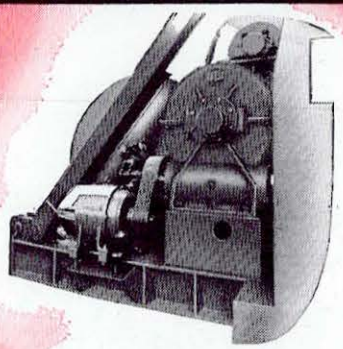
1 **Travel** clutches and complicated gearing have been eliminated by installing spring mounted motors inside the A.A.R. cast steel side frame trucks to supply travel power to axles.



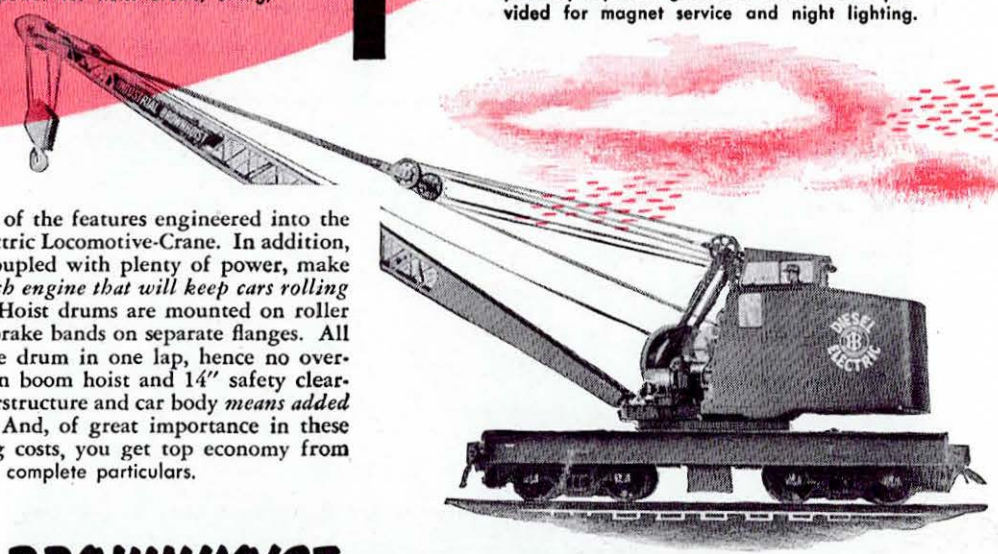
2 **Operator** in Monitor-type cab has 360° visibility and an unobstructed view of hoist and boom drums for faster, safer crane operation.



3 **Motor current** is provided by generator direct connected to diesel engine. Helical gear reducer supplies power for hoist drums, swing, and boom hoist.



4 **Electric swing** is available, with power supplied by separate generator which is also provided for magnet service and night lighting.

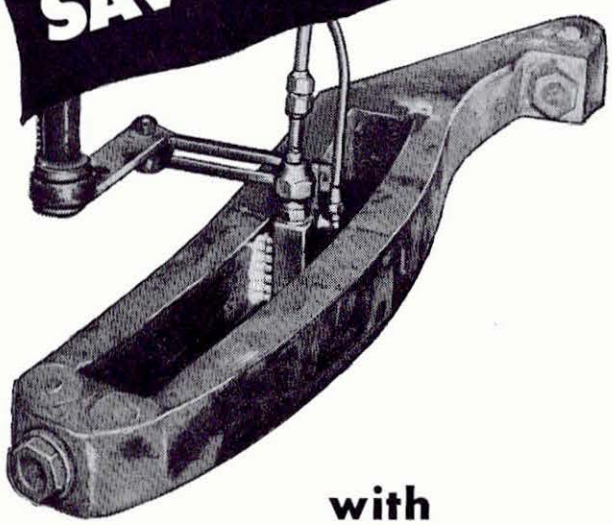


Illustrated are only a few of the features engineered into the new Brownhoist Diesel Electric Locomotive-Crane. In addition, 15 M.P.H. travel speeds, coupled with plenty of power, make it a *quick-accelerating switch engine that will keep cars rolling* in and out of your yards. Hoist drums are mounted on roller bearings, with clutch and brake bands on separate flanges. All boom cable is taken on the drum in one lap, hence no overwinding. Safe worm driven boom hoist and 14" safety clearance between rotating superstructure and car body *means added safety for your workmen.* And, of great importance in these days of increased operating costs, you get top economy from cheap fuel. Write today for complete particulars.

BROWNHOIST BUILDS BETTER CRANES

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICH. • **DISTRICT OFFICES:** NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO • **AGENCIES:** DETROIT, BIRMINGHAM, HOUSTON, LOS ANGELES, PORTLAND, SAN FRANCISCO, SEATTLE, SPOKANE, CANADIAN BROWNHOIST LTD., MONTREAL, QUEBEC.

SAVE DOLLARS



with FLAME-HARDENING

Are you taking full advantage of the flame-hardening process in your shops? This list will help you compare the flame-hardening operations that are being done on your railroad with the broad application of this money-saving process in scores of shops following OXWELD procedures. Usually you can adapt existing setups to harden any additional parts.

Write for booklet F-5422 which discusses flame-hardening principles as they apply to railroads. OXWELD representatives will be glad to review your flame-hardening operations with you.

The word "Oxweld" is a registered trade-mark.

HERE IS A CHECK-LIST ON FLAME-HARDENING

Locomotive Parts

Articulating pins

Booster gears
Booster shafts
Brake beam trunnions
Brake rigging pins
Buffer castings
Buffer radial blocks
Buffer wedges

Chafing castings
Cradle pins
Crosshead guides — bar type
Crosshead guides — multiple bearing
Crosshead shoes

Drawbar pins
Driver spring equalizers
Driver spring saddles
Driving box liners
Driving box jaw surfaces
Driving wheel lateral wedges

Equalizers
Equalizer crossbars
Equalizer pins

Floating crosshead guide housing

Knuckle pins
Knuckle pin bushings

Lead truck boxes
Lead truck pedestal jaws
Lead truck rocker bearings
Lead truck rocker castings
Lead truck rocker seats
Lead truck swing bolsters
Links
Link boxes

Pedestal shoes
Pedestal wedges
Piston head ring grooves
Piston valve packing rings

Reversing yokes

Slack adjusting wedges
Spring hangers
Stoker gears
Stoker racks
Stoker screws
Swing hangers
Tender truck journal boxes
Trailer equalizers
Trailer rocker plate
Trailer rocker plate rollers
Trailer truck rocker castings
Truck equalizer pins (electric locomotives)

Valve crossheads
Valve crosshead gibs
Valve crosshead guides
Valve crosshead shoes

Wrist pins

Coach Parts

Buffer castings
Buffer stems

Coupler knuckles

Equalizer seat inserts

Generator drive pulleys

Journal box wedges
Journal box wedge seats

Slack adjusters
Spring seats

Truck equalizers
Truck pedestals

Car Parts

Bolster spring seats
Buffer castings

Coupler carrier castings
Coupler knuckles
Coupler lock
Coupler lock lifter

Hopper car door lock

Journal brass wedges

Side bearing parts

Others

Crane wheels

Derrick bearings

Punch or die blocks

Spring stripper blocks

Tractor traction bearing rolls
Travelling crane pinions
Turntable rollers

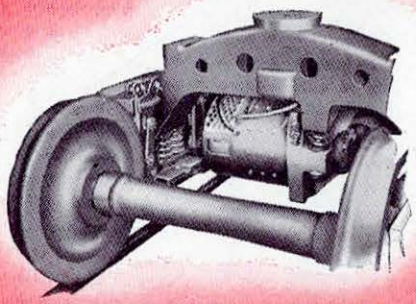
THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

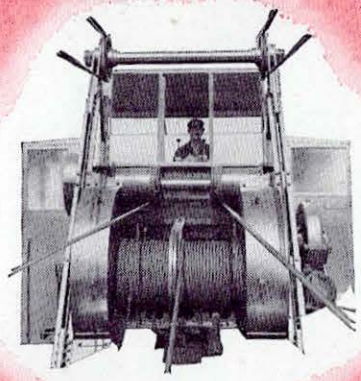
BROWNHOIST DIESEL ELECTRIC LOCOMOTIVE-CRANE

Sets a new high in crane efficiency and economy.

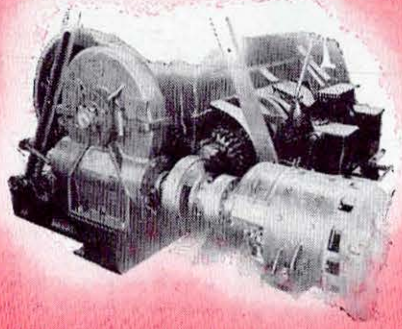
... AND HERE ARE 4 REASONS WHY



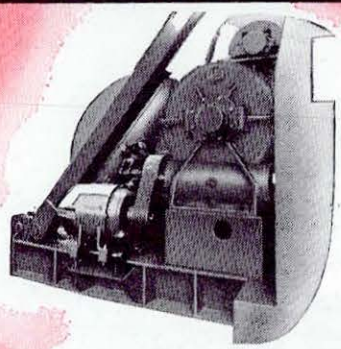
1 Travel clutches and complicated gearing have been eliminated by installing spring mounted motors inside the A.A.R. cast steel side frame trucks to supply travel power to axles.



2 Operator in Monitor-type cab has 360° visibility and an unobstructed view of hoist and boom drums for faster, safer crane operation.



3 Motor current is provided by generator direct connected to diesel engine. Helical gear reducer supplies power for hoist drums, swing, and boom hoist.



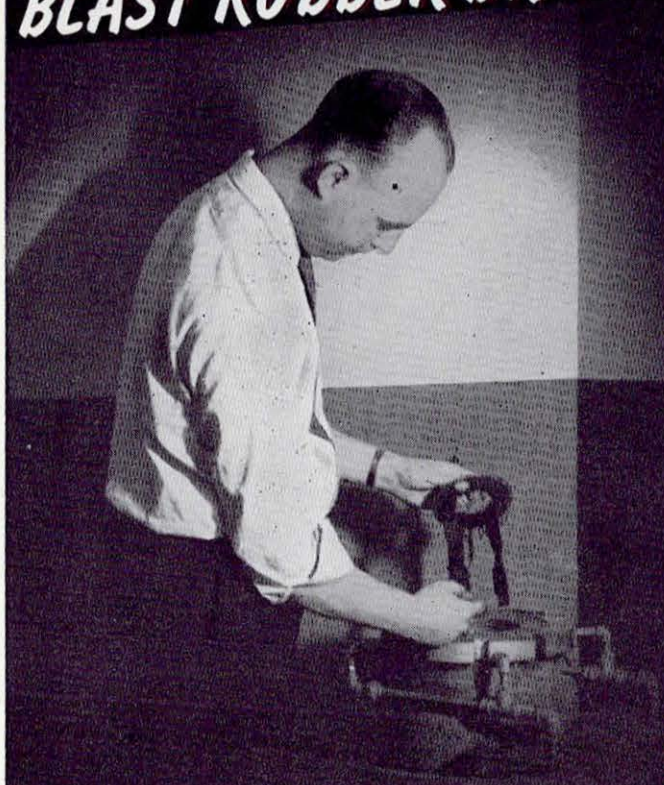
4 Electric swing is available, with power supplied by separate generator which is also provided for magnet service and night lighting.

Illustrated are only a few of the features engineered into the new Brownhoist Diesel Electric Locomotive-Crane. In addition, 15 M.P.H. travel speeds, coupled with plenty of power, make it a *quick-accelerating switch engine that will keep cars rolling* in and out of your yards. Hoist drums are mounted on roller bearings, with clutch and brake bands on separate flanges. All boom cable is taken on the drum in one lap, hence no overwinding. Safe worm driven boom hoist and 14" safety clearance between rotating superstructure and car body *means added safety for your workmen.* And, of great importance in these days of increased operating costs, you get top economy from cheap fuel. Write today for complete particulars.

BROWNHOIST BUILDS BETTER CRANES

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICH. • **DISTRICT OFFICES:** NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO • **AGENCIES:** DETROIT, BIRMINGHAM, HOUSTON, LOS ANGELES, PORTLAND, SAN FRANCISCO, SEATTLE, SPOKANE, CANADIAN BROWNHOIST LTD., MONTREAL, QUEBEC.

OXYGEN BOMB TESTS BLAST RUBBER BREAKDOWN



QUAKER PRE-TESTED BELTS, HOSE, PACKINGS

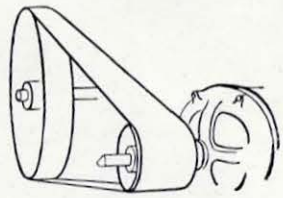
. . . get a long lease on life
. . . give plant economy a lift

Each batch of rubber used in making Quaker products is pre-tested for toughness, adhesion, resistance to aging. Shown above, samples of rubber compounds are being subjected to the oxygen bomb test—a miniature "torture chamber" that crams the effects of two years of severe operation into four grueling days. Performance-proved assurance that each rubber compound "can take it" is essential before being built into Quaker belting, hose, packings.

Check the panel on the right and see how Quaker pre-tested products can help keep operating costs low . . . output up, in your company. Remember—Quaker has been supplying quality rubber products to Industry for 63 years . . . pre-tested and proved for peak performance.

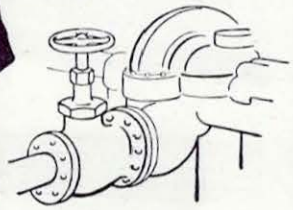
QUAKER RUBBER CORPORATION
PHILADELPHIA 24, PA. • New York 7 • Cleveland 15 • Chicago 16 • Houston 1
Western Territory
QUAKER PACIFIC RUBBER CO. • San Francisco 5 • Los Angeles 21 • Seattle 4

WHAT QUAKER Pre-Tested Products mean to Railroads



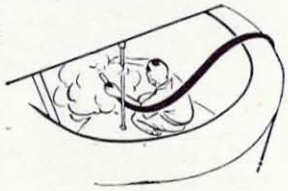
STEADY GRIP . . . LESS SLIP

Quaker V-belts and flat belting are pre-tested to provide plenty of grip, plenty of pull for more power. Pre-tested rubber stays flexible, withstands aging and abrasion.



TIGHT-SEALING OPERATION

Quaker pre-tested packings for all purposes keep pressure in . . . stop leaks on valve stems, piston rods, flanges. Made of pre-tested materials for long life.



LONG SERVICE AT HIGH PRESSURE

Quaker hose provides low-cost handling of steam, air, liquids, volatiles. Pre-tested rubber remains pliable, flexes easily, combats breakdown.

ENGINEERING SERVICE

When belting, hose, and packing problems bog down efficiency in your plant, call your Quaker Distributor for a quick solution.

QUAKER RUBBER CORPORATION · PHILADELPHIA, PA. · QUALITY SINCE 1885
REG. U. S. PAT. OFF.

QUAKER RUBBER PRODUCTS
custom made for every industrial use

what..?..NO replacements?

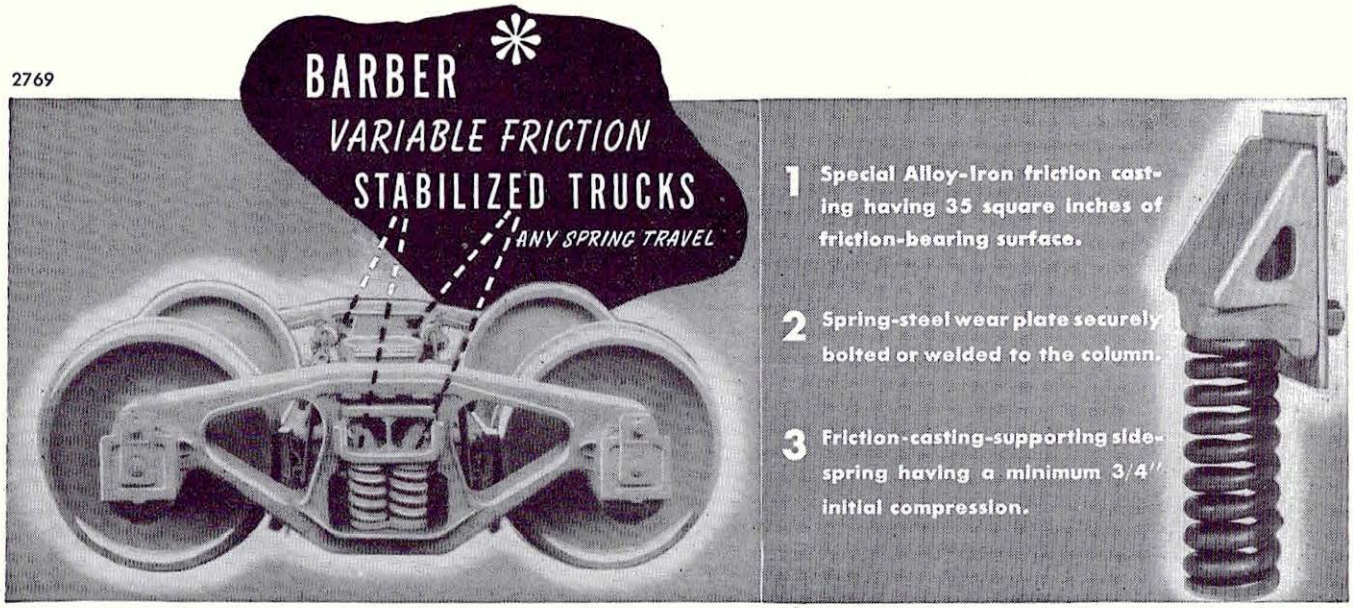
— Well... hardly any!

A surprisingly small percentage of *Barber Friction Castings* have required replacement—yet many Barber Trucks have been in service 10 to 12 years.

For proven, long-lasting stabilizing action, specify *Barber* Variable-Friction Stabilized Trucks.

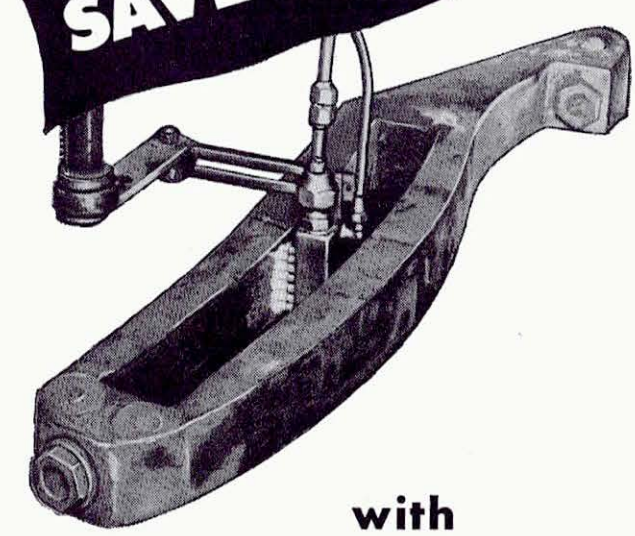
Over 180,000 Barber Stabilized Trucks have been ordered

2769


BARBER
VARIABLE FRICTION
STABILIZED TRUCKS
ANY SPRING TRAVEL
1 Special Alloy-Iron friction casting having 35 square inches of friction-bearing surface.
2 Spring-steel wear plate securely bolted or welded to the column.
3 Friction-casting-supporting side-spring having a minimum 3/4" initial compression.

STANDARD CAR TRUCK COMPANY
332 SOUTH MICHIGAN AVENUE, CHICAGO, ILLINOIS

SAVE DOLLARS



with FLAME-HARDENING

Are you taking full advantage of the flame-hardening process in your shops? This list will help you compare the flame-hardening operations that are being done on your railroad with the broad application of this money-saving process in scores of shops following OXWELD procedures. Usually you can adapt existing setups to harden any additional parts.

Write for booklet F-5422 which discusses flame-hardening principles as they apply to railroads. OXWELD representatives will be glad to review your flame-hardening operations with you.

The word "Oxweld" is a registered trade-mark.

HERE IS A CHECK-LIST ON FLAME-HARDENING

Locomotive Parts

Articulating pins

Booster gears
Booster shafts
Brake beam trunnions
Brake rigging pins
Buffer castings
Buffer radial blocks
Buffer wedges

Chafing castings
Cradle pins
Crosshead guides—bar type
Crosshead guides—multiple bearing
Crosshead shoes

Drawbar pins
Driver spring equalizers
Driver spring saddles
Driving box liners
Driving box jaw surfaces
Driving wheel lateral wedges

Equalizers
Equalizer crossbars
Equalizer pins

Floating crosshead guide housing

Knuckle pins
Knuckle pin bushings

Lead truck boxes
Lead truck pedestal jaws
Lead truck rocker bearings
Lead truck rocker castings
Lead truck rocker seats
Lead truck swing bolsters
Links
Link boxes

Pedestal shoes
Pedestal wedges
Piston head ring grooves
Piston valve packing rings

Reversing yokes

Slack adjusting wedges
Spring hangers
Stoker gears
Stoker racks
Stoker screws
Swing hangers
Tender truck journal boxes
Trailer equalizers
Trailer rocker plate
Trailer rocker plate rollers
Trailer truck rocker castings
Truck equalizer pins (electric locomotives)

Valve crossheads
Valve crosshead gibs
Valve crosshead guides
Valve crosshead shoes

Wrist pins

Coach Parts

Buffer castings
Buffer stems

Coupler knuckles

Equalizer seat inserts

Generator drive pulleys

Journal box wedges
Journal box wedge seats

Slack adjusters
Spring seats

Truck equalizers
Truck pedestals

Car Parts

Bolster spring seats
Buffer castings

Coupler carrier castings
Coupler knuckles
Coupler lock
Coupler lock lifter

Hopper car door lock

Journal brass wedges

Side bearing parts

Others

Crane wheels

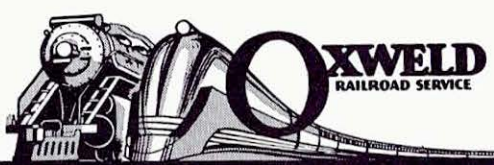
Derrick bearings

Punch or die blocks

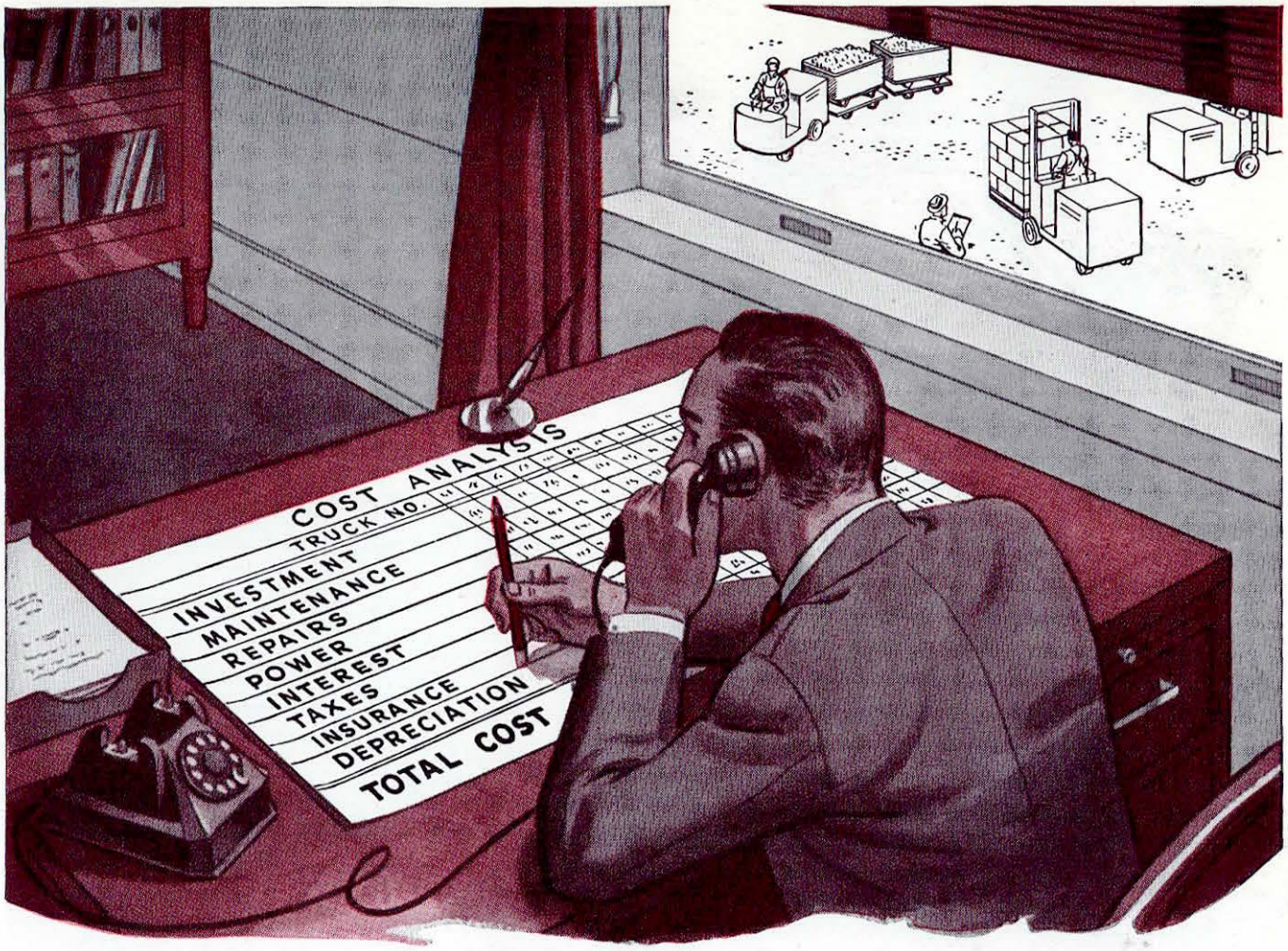
Spring stripper blocks

Tractor traction bearing rolls
Travelling crane pinions
Turntable rollers

THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto



SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS



"When we figured *ALL* costs, we settled on *ELECTRIC TRUCKS.*"

"Yes, Jim, we once slipped on that one, too . . . comparing price-tags only . . . when buying industrial trucks. But a check of overall costs opened our eyes to the real story. 'Matter of fact, on our battery-driven trucks, savings in maintenance and power alone offset the price-tag angle . . . in a hurry! That's one of the reasons why we've settled on 'electrics'."

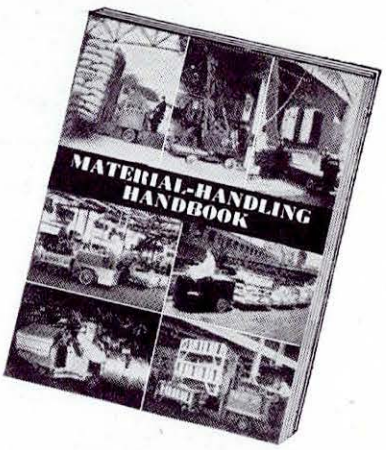
Familiar testimony from users who have made their own comparison of total costs. Others, who look beyond the price-tag before they buy, see top economy in basic and exclusive features of the electric industrial truck. For example:

LOWEST-COST ENERGY—electric power at ever-decreasing cost—and most reliable *for all industrial power requirements.*

SIMPLEST, STURDIEST CONSTRUCTION—the simplicity of electric transmission and control. The inherent stamina of E.I.T.A. Recommended Construction Standards—stamina that costs less than breakdowns in material flow.

UNEXCELLED PERFORMANCE RECORD—over 90% of the electric trucks sold in the past twenty years, to more than 300 fields of industry and distribution, *are still in constant service.*

These are some of the values behind the price-tag and behind the swing to *electric* industrial trucks.



SEND FOR THIS FREE BOOKLET

You will find tested, how-to-do-it suggestions for raising man-hour and machine-hour productivity—in the MATERIAL-HANDLING HANDBOOK. Your letter will bring it.

THE ELECTRIC INDUSTRIAL TRUCK ASSOCIATION

29-28R Forty-first Avenue, Queens Plaza, Long Island City 1, N. Y.

How Much

CAN PRE-FRAMED CREO-PINE

BRIDGE TIMBERS *SAVE YOU?*

ON busy tracks, replacing bridge timbers can be expensive. By hand-framing in the field, only one timber can be drawn, a new one inserted, adzed to fit, holes bored, etc. Alert railroad men save up to 50 per cent on installation costs by using pre-framed Creo-pine timbers. Mill framed, timbers are dapped, bored and sized *before* treatment with accuracy not possible in hand framing. Shipped ready for use, several timbers can be replaced at once even where trains pass every 15 or 20 minutes. Creo-pine products are pressure creosoted to insure long life. Write for information on preframed Creo-pine timbers and other bridge members —and see how they can save money for you.

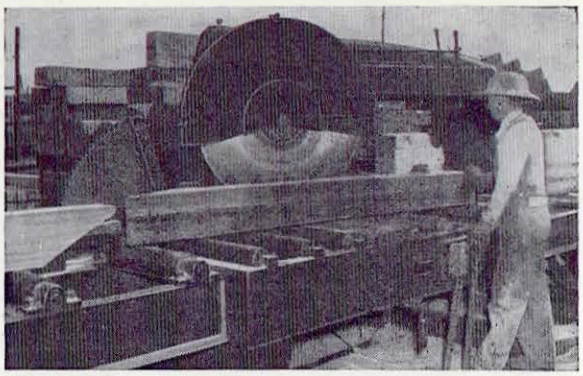
Creo-pine
CREOSOTED SOUTHERN PINE
TRADE MARK REG. U.S. PAT. OFF.

CREO-PINE PRODUCTS:

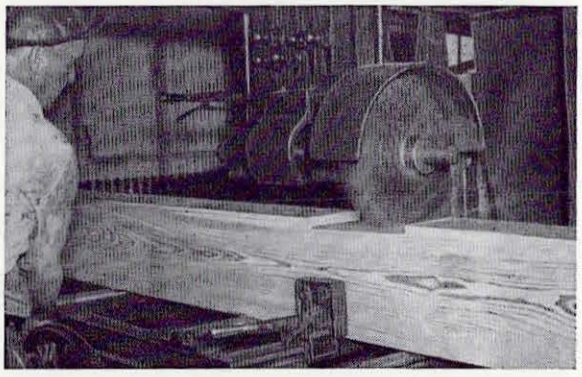
Poles	Floor Blocks
Piling	Subfloring
Cross ties	Bridge Timbers
Cribbing	Guard Rail

Structural Timbers, etc.

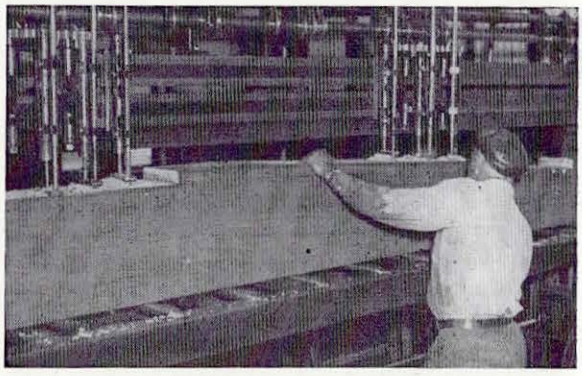
SOUTHERN WOOD PRESERVING COMPANY
ATLANTA, GEORGIA
Representatives in New York, Philadelphia, Toledo, Pittsburgh, Detroit and Chattanooga



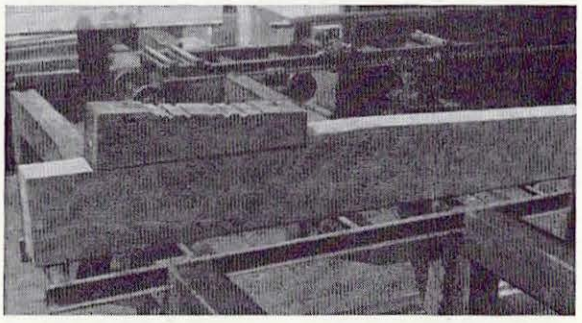
Timber saw set for angle cutting. Can be set for any angle, important in preframing batter posts accurately.



Pine timber being dapped. Accuracy of dimensions possible to a degree which cannot be obtained with hand tools.



Timber boring machine with six holes made simultaneously. Designed to bore 20 holes, practically any pattern can be obtained with accuracy of spacing and truly perpendicular bore.



Finished bridge tie. This one built up so track will be banked properly. Note rivet notches and dapping for quick installation.

Car Wheels Bored in 50 Seconds

THIS SPECIAL-PURPOSE, automatic-cycle machine is designed and built by Snyder for rough and finish boring railroad car wheels.

Its particular significance to railroads and to other industries with comparable metal-cutting problems on large, heavy castings or forgings is that this machine combines improved accuracy with increased production rate and is engineered to maintain its efficiency over an estimated lifetime of 20 years. In these respects it constitutes a definite advance over existing practice.

On steel wheels, the cutting time for finish boring 1/8" stock per side is 1 minute 20 seconds for a hole 7" long and 7" diameter. The same amount of stock is removed from cast iron wheels in 50 seconds. Cutting tools are T. C. tipped.

Chamfering and facing a 1½" flange may be performed simultaneously with the boring operation. Flanges up to 18" diameter with a maximum width of 6½" can be faced by an hydraulically actuated facing attachment carried on the machine spindle.

A 19" stroke is provided so that rough and finish boring may be performed in succession.

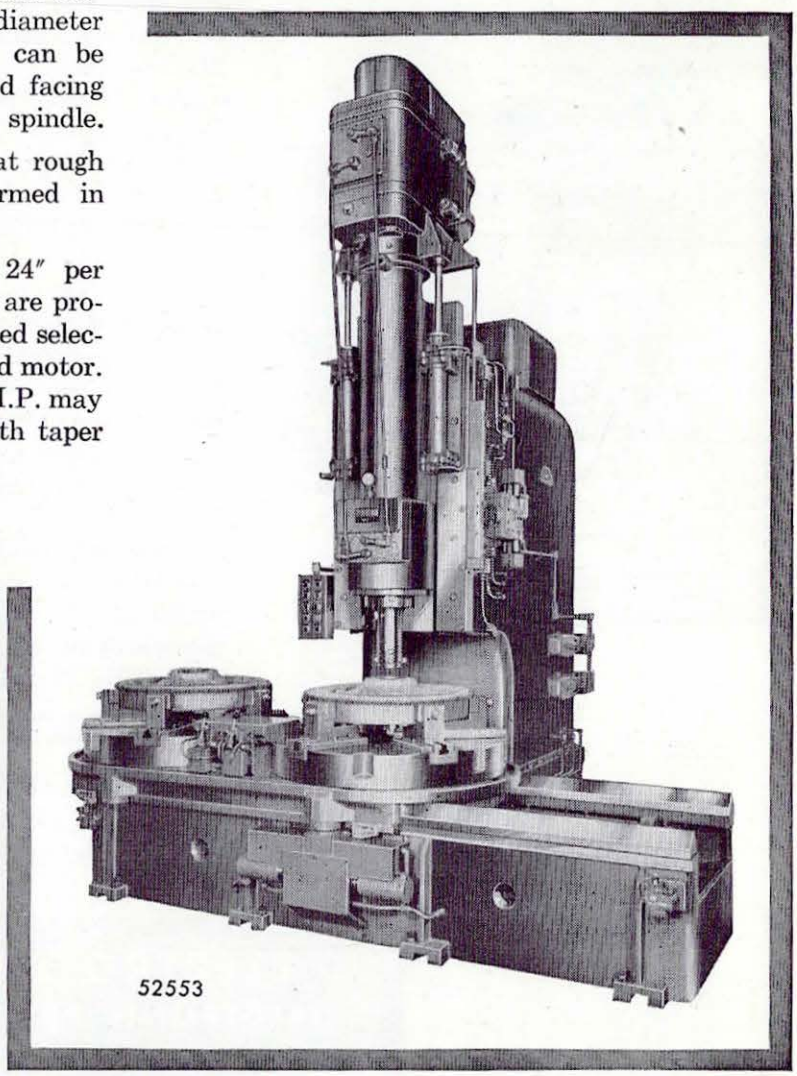
Spindle feeds are from 2" to 24" per minute and various spindle speeds are provided through the use of a four-speed selective transmission or a variable speed motor. Either AC or DC motors up to 40 H.P. may be used. Spindle is heavy-duty with taper roller bearing mounting.

The table travels upon V-ways, case-hardened, ground and automatically lubricated to provide smooth operation. The V design allows for normal wear without side-play which would impair accuracy. Table travel is by hydraulic actuation with 5-second time interval.

Work is held by two 5-jawed chucks of 48" capacity, operated by individual hydraulic cylinders. Work-cycle is automatic.

The advances represented in this machine —greater accuracy, higher production, longer life, automatic operation (practical for unskilled help), maximum safety—are typical of the advantages offered in Snyder-engineered special-purpose machines.

We invite your inquiries. *Snyder Tool & Engineering Company, 3400 E. Lafayette, Detroit 7, Michigan.*



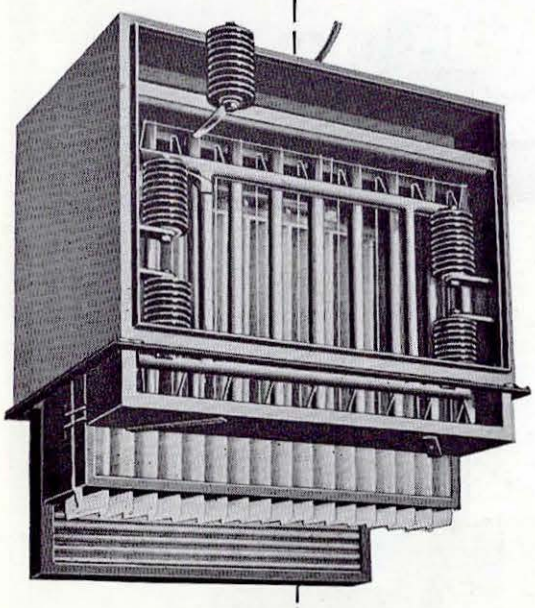
52553

SNYDER

DESIGNERS AND BUILDERS OF MACHINERY FOR HIGH PRODUCTION AT LOW UNIT COST

22 Years of Successful Cooperation with Leading American Industries

There's super-clean air in the new Zephyrs ...upstairs and down!



THE new Burlington Twin Zephyrs, operating daily between Chicago and St. Paul-Minneapolis, feature glass penthouses in the car roofs. But whether passengers ride "upstairs" in these vista-domes or "downstairs" in regular seats, everybody enjoys the increased comfort of super-clean air provided by AAF Electro-Airmat.

AAF Electro-Airmat Electronic Precipitators, installed in the air conditioning units, insure super-clean air for all those who ride these trains of today. Electro-Airmat, using AAF's exclusive Airmat* paper, removes dust, dirt, lint and tobacco smoke from the air, resulting in cleaner cars and increased comfort. Airmat's tested advantages are:

• Cleaning effectiveness 10 times greater than ordinary mechanical filters. • Average cleaning efficiency 90% in removal of dust, dirt, lint and smoke based upon The Bureau of Standards Discoloration Tests. • Simple to maintain—no cleaning, re-oiling and handling of collector plates. Airmat paper is disposable and quickly installed for new filter performance. • In case of power failure, Electro-Airmat functions as an effective mechanical filter. • Less weight—space required in direction of airflow is ⅓ less than the usual plate-type unit.

AAF Electro-Airmat is designed expressly for railroad passenger cars. There's a choice of design for side, bottom or front removal of the ionizer, collector element and odor filter. Request for Bulletin 254 will be handled without obligation to you.

*Airmat is the trade-mark (Reg. U.S. Pat. Off.) of the American Air Filter Company, Inc., for various air filters, dust collectors, and filtering media.

AMERICAN AIR FILTER COMPANY, INC.
111 Central Avenue, Louisville 8, Ky.
In Canada: Darling Bros., Ltd., Montreal, P. Q.

®AAF

ELECTRO·AIRMAT
ELECTRONIC PRECIPITATOR

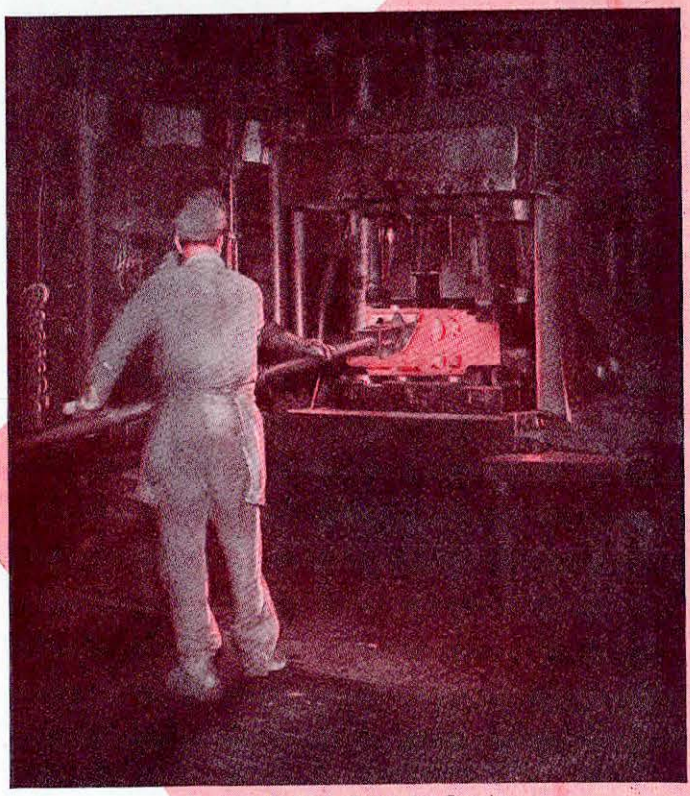
HOT DIE PRESSED
Bolster Center Fillers

A. A. R. ALTERNATE STANDARD

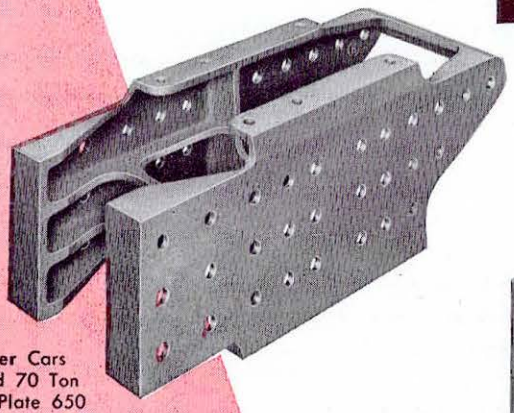
Pioneered and developed by Buckeye.
More than 58,000 car sets ordered from Buckeye by 43 railroads.

The use of Hot Die Pressed Bolster Center Fillers offers the following economies and advantages:

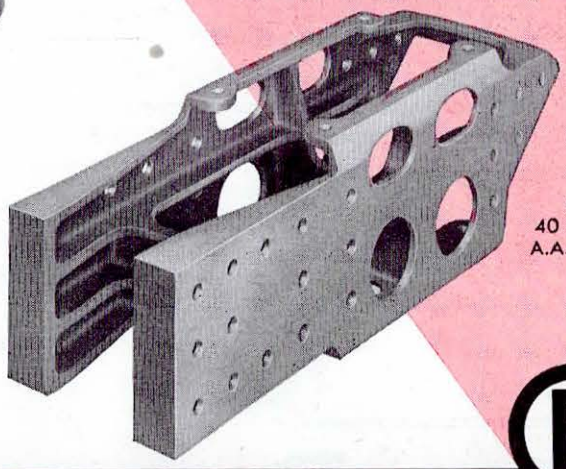
- Close tolerances maintained (A.A.R. Plate 537)
- Metal required for machining eliminated
- Uniform metal thicknesses with minimum weight
- Top, bottom, sides, and draft lugs die squared
- Homogeneous one-piece casting for maximum strength
- All rivet holes drilled



Buckeye Method of Hot Die Pressing Bolster Center Fillers



Hopper Cars
50 and 70 Ton
A.A.R. Plate 650



Box Cars
40 and 50 Ton
A.A.R. Plate 534

The Buckeye Steel Castings Co.

New York, N. Y. Columbus, Ohio Chicago, Ill.

90% of all ELWELL-PARKERS sold since 1928 are still going strong!

Mobile power-driven wrench "trapping" bottom gates on hopper cars.

● This fact is ample evidence that E-P trucks offer you the maximum in sound design and quality construction.

Another fact: Elwell-Parker's 42 years' experience in the industrial truck field is *unequalled*—consequently, our application knowledge is greater and more varied.

AND, Elwell-Parker does far more than merely supply 47 basic models—it "tailors" them to *your* specific materials handling condition. Already this individual engineering has been profitably applied in *over 300 branches of industry.*

Many basic truck attachments pioneered by Elwell-Parker—such as sideshifting and pushoff devices—are becoming standard throughout the industry. However, E-P trucks still offer many exclusive advantages. *An important example:*—only Elwell-Parker uses Class B motors exclusively. These motors cost more, but are well worth it—they handle 500% overload, are practically indestructible and fire proof.

WHAT DOES ALL THIS ADD UP TO? In durability, engineering experience, versatility, improved design, and services of the EP man on the job, *Elwell-Parker offers you more per dollar invested in industrial power trucks.* THE ELWELL-PARKER ELECTRIC COMPANY, 4240 St. Clair Avenue, Cleveland 14, Ohio.

Free Booklet on Scientific Materials Handling

Send for a copy of "Industrial Logistics"

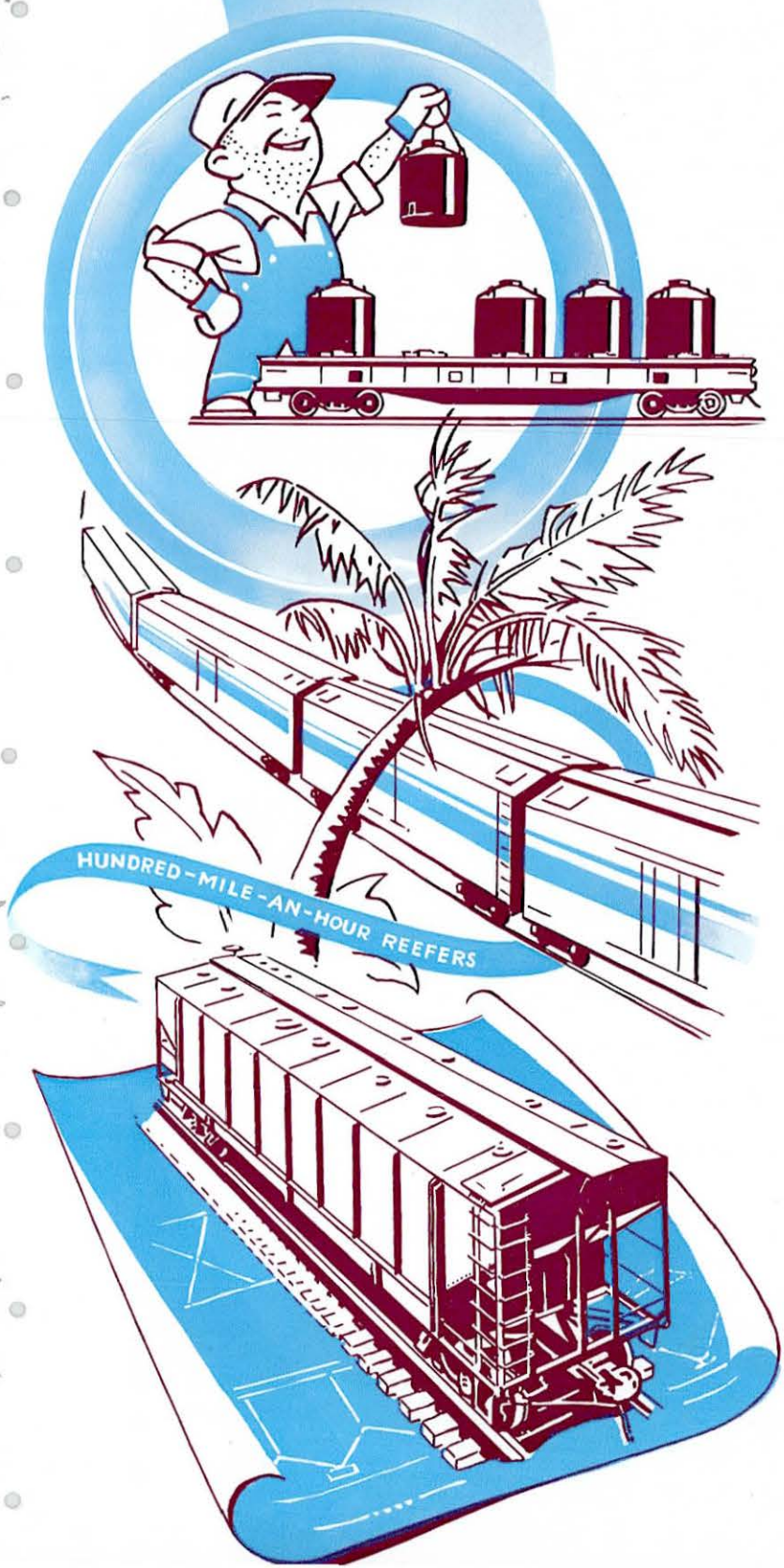
ELWELL-PARKER

Established 1893

POWER INDUSTRIAL TRUCKS

AS RAIL FREIGHT ROLLS FASTER...

a.c.f. AND THE RAILROADS ARE TEAMING-UP TO DEVELOP NEW WAYS THAT MAKE THE PAYLOAD PAY OFF!



REHANDLING ECONOMY!

Rolling stock won't lay idle when less-than-carload lots are loaded and unloaded in a.c.f.-L.C.L. containers and container cars. Shipper and Railroad *both* benefit from swifter service!

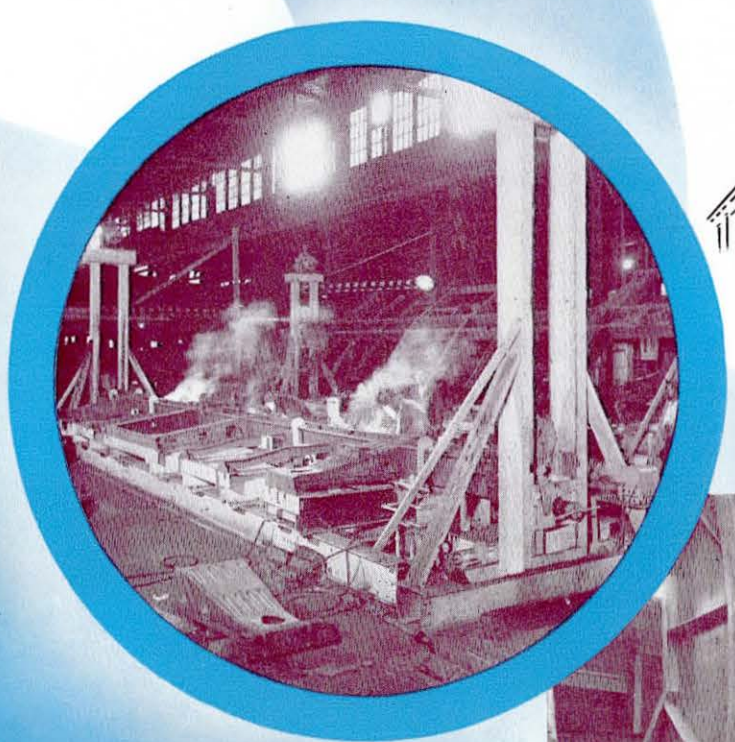
PAYLOADS BOTH WAYS!

Running mates for crack passenger streamliners, these high-speed reefers have interiors that can be heated or refrigerated with removable equipment! They're the answer to profitable tonnage, *coming and going!*

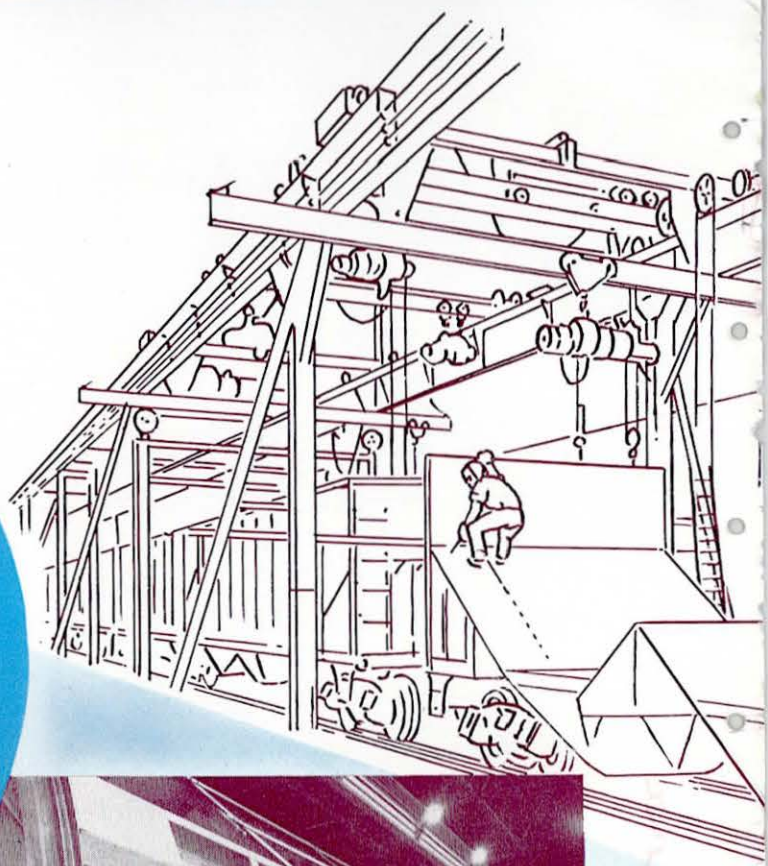
SAVING UNLOADING TIME!

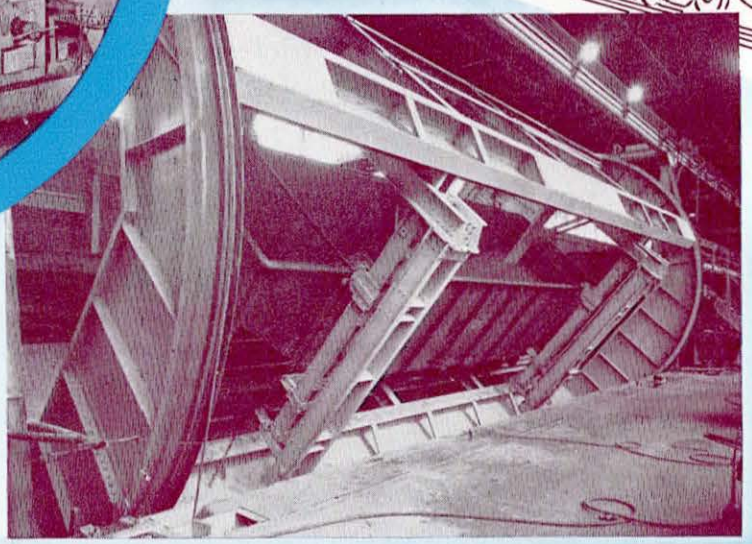
Covered hopper cars, besides keeping ladings bone dry, provide larger payloads on bulk commodities. Efficiency and speed in handling is facilitated by vented compartments which can be quickly unloaded *separately or simultaneously.*

AS RAIL FREIGHT ROLLS FASTER...



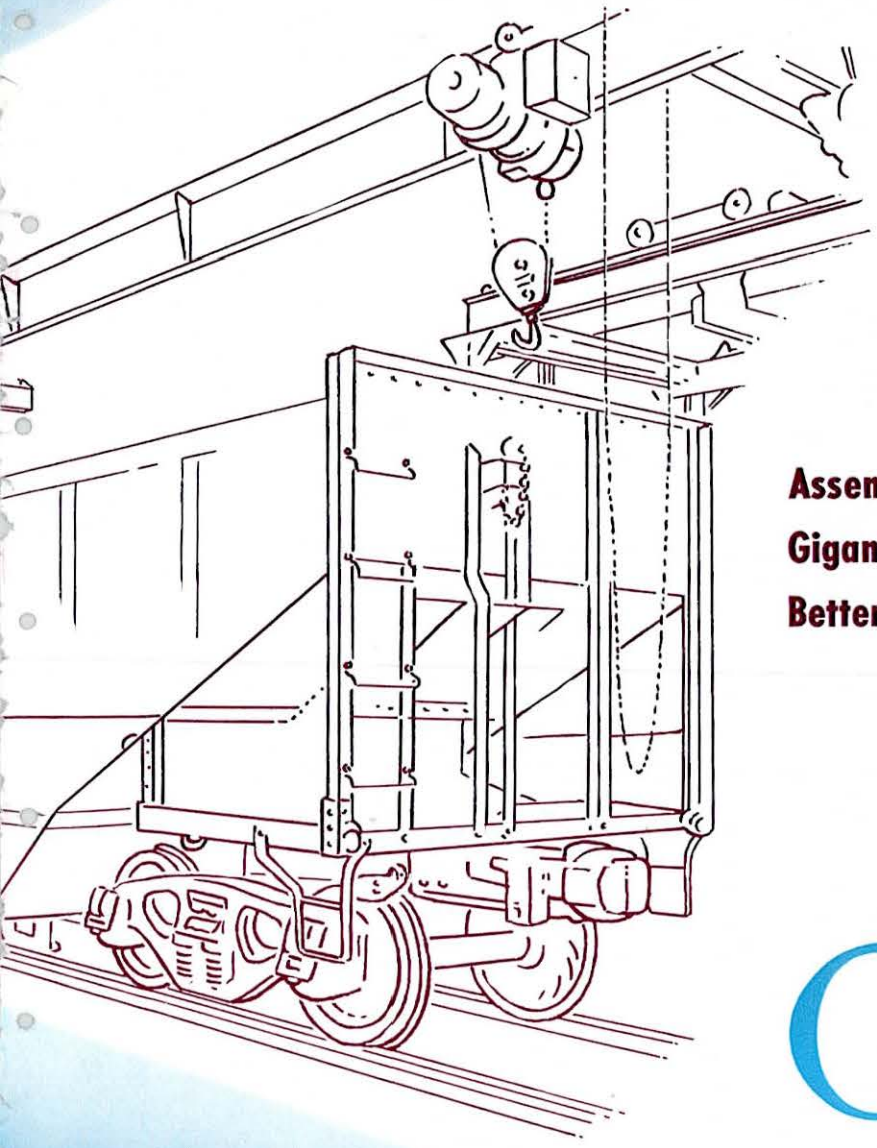
Complete underframes are jig-locked flat and rigid before a welder strikes his arc. Pneumatically operated jig rotates the entire assembly for desirable down welding. It's the "cornerstone" of four-square car building.





Mammoth car-size rollover jigs clamp the assembled freight cars (any size, any type) and move the entire assembly to a sequence of positions—permitting stronger, faster all-welded construction.

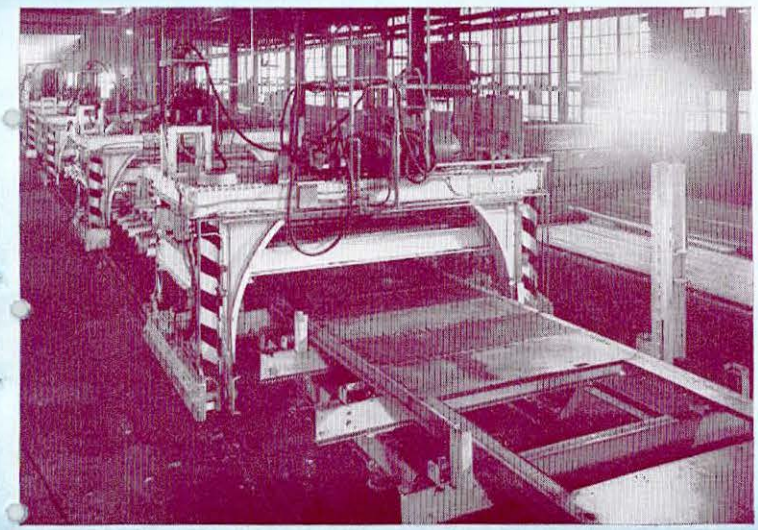
a.c.f. IS MASS-PRODUCING ALL-WELDED FREIGHT CARS THAT CAN WITHSTAND THE STRAINS OF SWIFTER RUNS!



Assembly-line techniques keep costs down
Gigantic new facilities speed-up production
Better-built, all-welded cars cut maintenance

a.c.f.

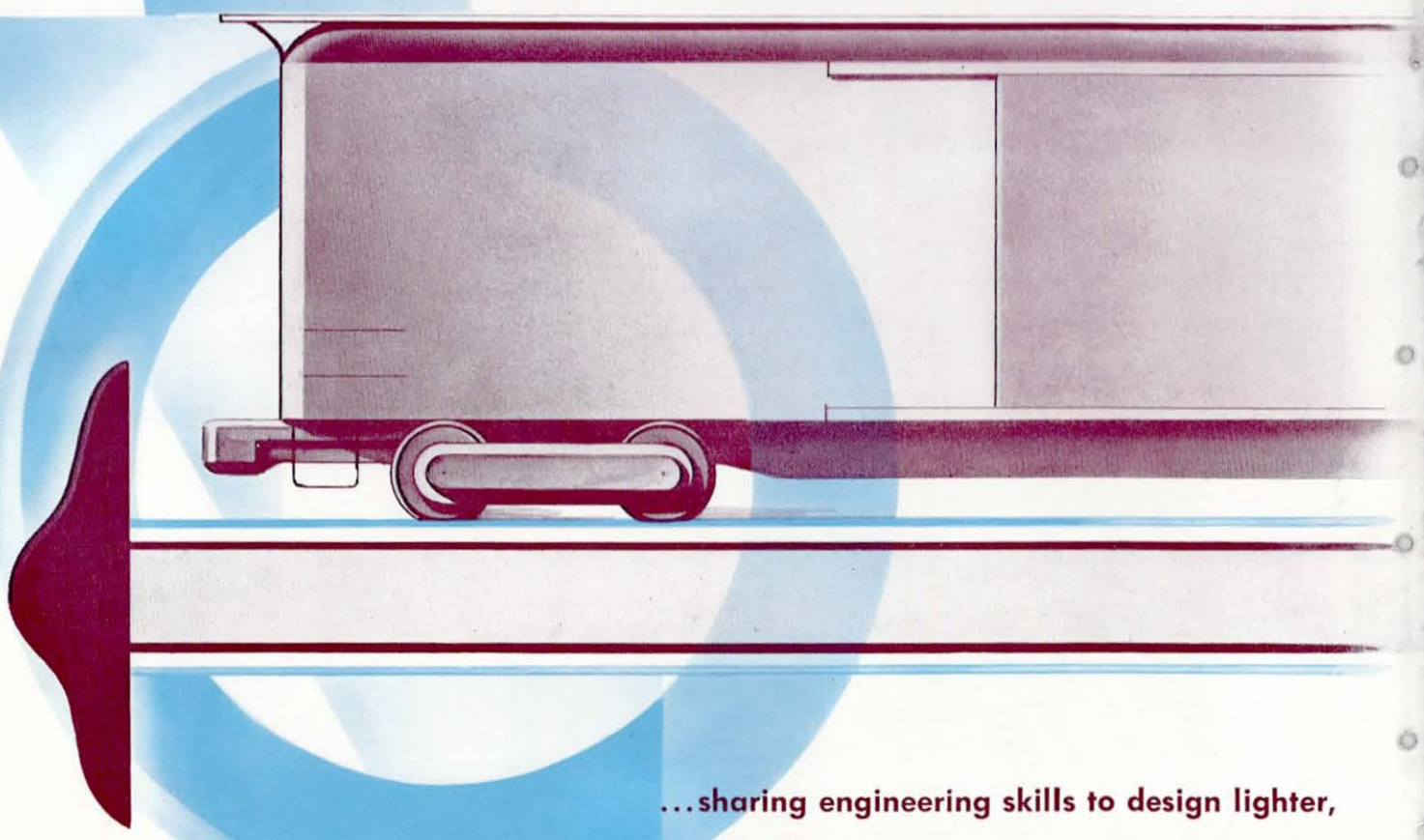
CAR BUILDERS TO AMERICA'S RAILROADS



Assembly-line production of refrigerator cars is standardized in a.c.f. car building with economies of construction that accrue to Railroads and Shippers alike.

AS RAIL FREIGHT ROLLS FASTER...

a.c.f. IS WORKING WITH RAILROADS AND SHIPPERS TO BUILD THE 'FREIGHT CARS OF THE FUTURE'...



...sharing engineering skills to design lighter, faster, more durable rolling stock...the kind of rolling stock that helps build a Railroad's reputation! American Car and Foundry Company, New York · Chicago · St. Louis · Washington Cleveland · Philadelphia · Pittsburgh San Francisco

a.c.f.

CAR BUILDERS TO AMERICA'S RAILROADS

"It's a job for American Bridge"

Times change- but not the reliance on American Bridge for a modern job, efficiently performed. American Bridge Company erected this train shed for the Pennsylvania Railroad Company at Pittsburgh, Pa. in 1902. And, in 1947, when the shed had become outmoded, it was American Bridge that got the call to dismantle it.

The pictures and captions show more than 45 years of progress. They show the equipment, experience, ingenuity and efficiency which typify American Bridge operations . . . which cause more and more men in management to say: *"It's a job for American Bridge."*

IN 1902, this American Bridge installation for the Pennsylvania Railroad at Pittsburgh was the "last word" in train sheds. But compare the equipment used for this erection with the modern derricks and special traveling crane used for the dismantling operations.

IN 1947, American Bridge engineers dismantled the train shed by means of this traveler—200 ft. long and 74 ft. wide. Specially designed, it mounted two stiff-leg derricks, and enabled completion of the job on schedule without inconveniencing passengers or disrupting traffic.

EFFECTIVE SAFETY PRECAUTIONS included heavy timbers on the deck of the traveler so nothing could fall below . . . sealing of all cracks . . . and constant wetting down of the entire deck. The whole operation was another example of American Bridge care in doing the job *right.*

AMERICAN BRIDGE COMPANY · USS STEEL · UNITED STATES STEEL

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Contracting Offices in: Baltimore · Boston · Chicago · Cincinnati · Cleveland · Denver · Detroit
Duluth · Minneapolis · New York · Philadelphia · St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Export Company, New York

UNITED STATES STEEL

SERVES THESE RAILROADS... for PROGRESS!

LFM is proud to serve this array of railroads. For over 75 years, we have helped them give better service by improving heavy duty railroad equipment. For instance, LFM pioneered the development of the lightweight piston and the combination sectional "lipped type" packing ring. These and other developments make us proud of our part in the progress of the railroads.

In 1872 LFM started operations in one small building. Today there are two huge plants that house the iron, steel and bronze foundries, the most up-to-date pattern and machine shops. All these LFM facilities are at your service . . . our engineers are always available for consultation. Call on us any time . . . there is no obligation.

THE LOCOMOTIVE

ATCHISON, KANSAS . . . *Main Offices and Plant*

L&N

GREAT NORTHERN RAILWAY

UTAH U.C.R. RAILWAY

C AND O

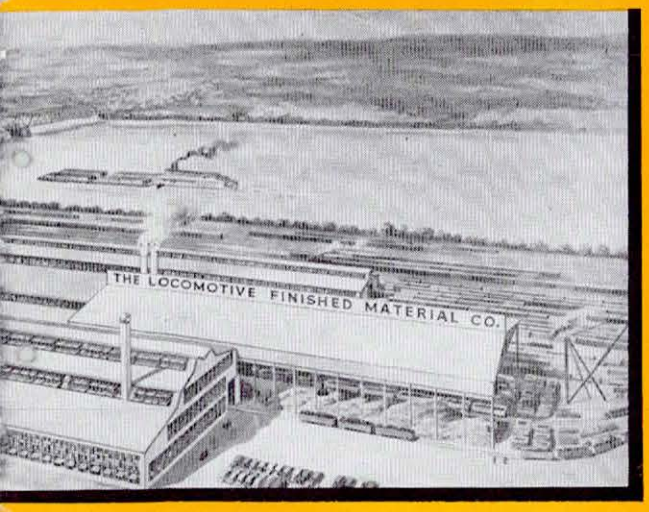
KANSAS CITY SOUTHERN Lines

MISSOURI PACIFIC LINES

UNION PACIFIC

CHICAGO AND NORTH WESTERN SYSTEM

Alton and Southern
ST. LOUIS - EAST ST. LOUIS
GATEWAY



Burlington Route

The New York New Haven and Hartford RAILROAD CO.

VIRGINIAN VGN RAILWAY

LINKING 13 GREAT STATES WITH THE NATION B&O

CENTRAL VERMONT RAILWAY

D&I

THE BESSEMER ROUTE

SPOKANE PORTLAND AND SEATTLE RY.

Green Bay Route

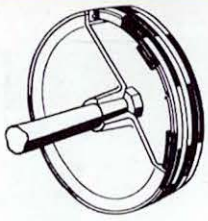
WESTERN PACIFIC

THE TEXAS T AND P PACIFIC RAILWAY

Reading lines

GM&O
The Alton Route

KANSAS CITY TERMINAL RAILWAY

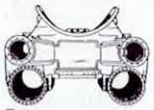


Lightweight Alloy Steel Piston and Universal Sectional Bull and Packing Rings

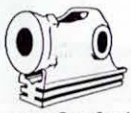
Universal Alloy Electric Steel Frogs

Universal Wheel Centers

Diesel Locomotive One-Piece Truck Frames



One-Piece Locomotive Cylinder Castings



Alloy Cast Steel Locomotive Cross Heads

Valve Chamber Bushings of Air Furnace Iron

FINISHED MATERIAL CO.

CHICAGO, ILLINOIS

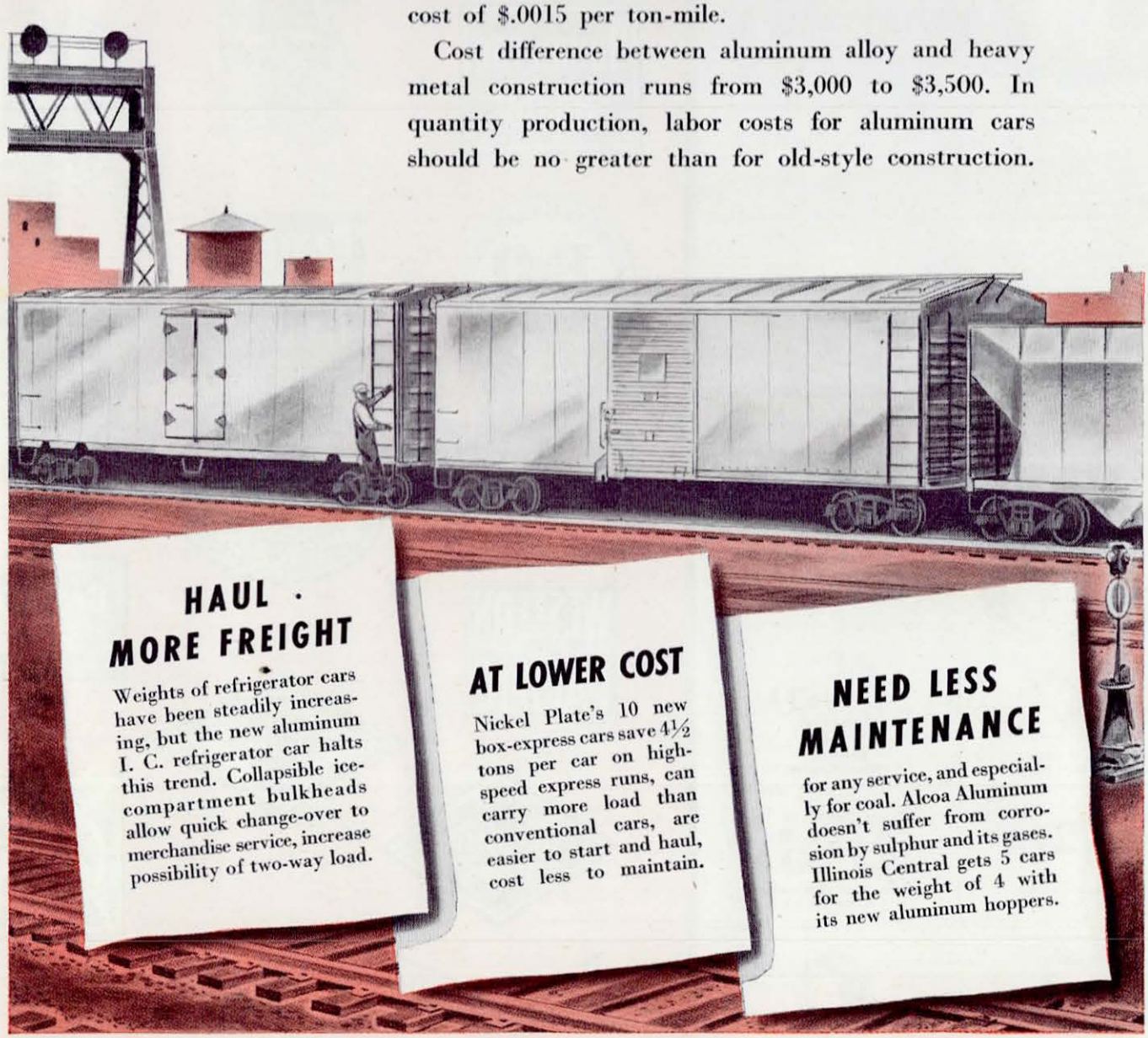
NEW YORK CITY, NEW YORK

Will you spend money

A standard refrigerator car built of Alcoa Aluminum can easily save you more than $468.00 a year, which is 15% on an investment of $3,120.00.

These figures are based on an annual mileage of 50,000, a weight saving of 6.25 tons, and an operating cost of $.0015 per ton-mile.

Cost difference between aluminum alloy and heavy metal construction runs from $3,000 to $3,500. In quantity production, labor costs for aluminum cars should be no greater than for old-style construction.



HAUL MORE FREIGHT

Weights of refrigerator cars have been steadily increasing, but the new aluminum I. C. refrigerator car halts this trend. Collapsible ice-compartment bulkheads allow quick change-over to merchandise service, increase possibility of two-way load.

AT LOWER COST

Nickel Plate's 10 new box-express cars save 4½ tons per car on high-speed express runs, can carry more load than conventional cars, are easier to start and haul, cost less to maintain.

NEED LESS MAINTENANCE

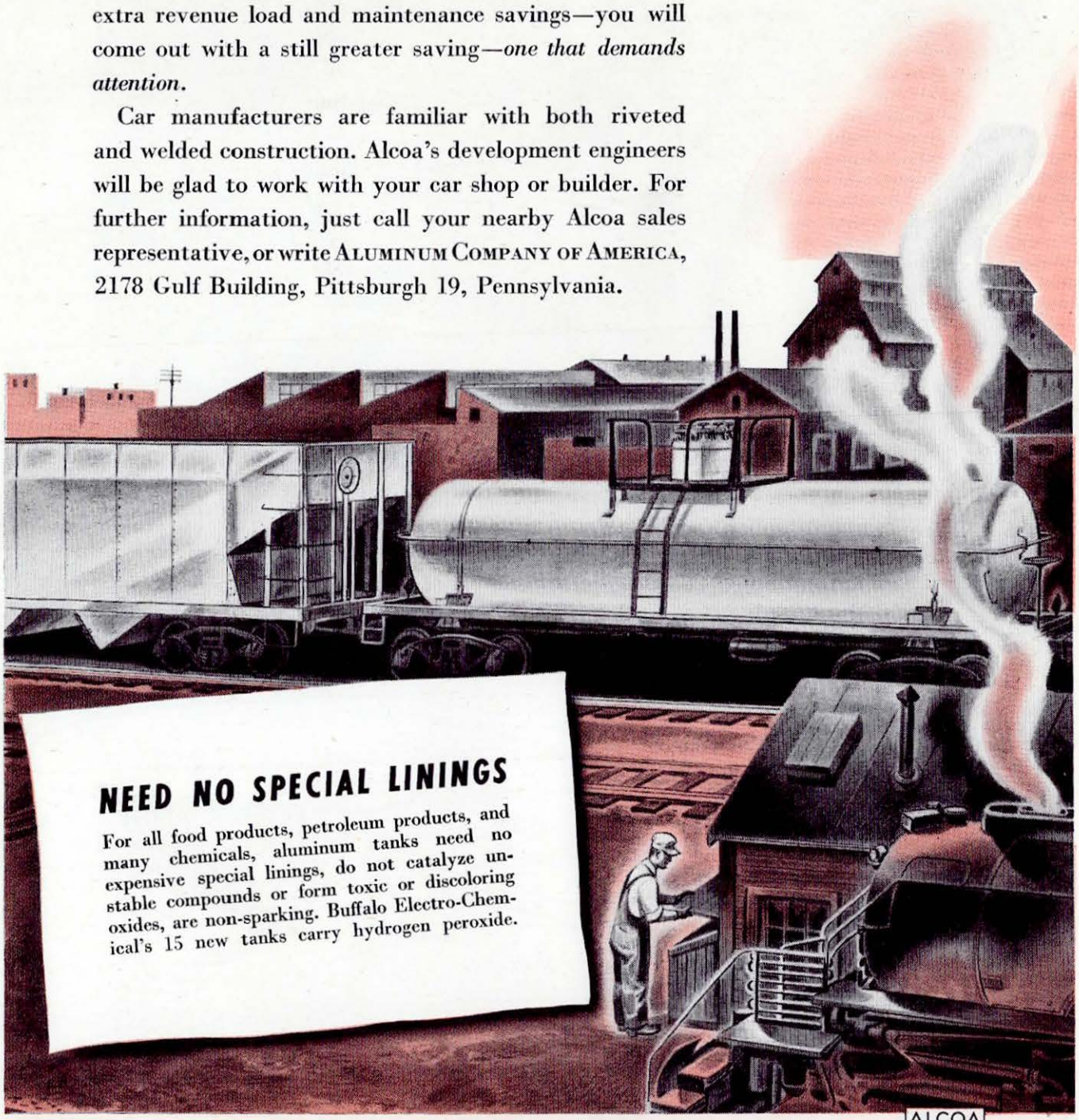
for any service, and especially for coal. Alcoa Aluminum doesn't suffer from corrosion by sulphur and its gases. Illinois Central gets 5 cars for the weight of 4 with its new aluminum hoppers.

Modern Railroading Calls for MAXIMUM Economies ⇨

to make money?

Use your own ton-mile cost and mileage—add the extra revenue load and maintenance savings—you will come out with a still greater saving—*one that demands attention.*

Car manufacturers are familiar with both riveted and welded construction. Alcoa's development engineers will be glad to work with your car shop or builder. For further information, just call your nearby Alcoa sales representative, or write ALUMINUM COMPANY OF AMERICA, 2178 Gulf Building, Pittsburgh 19, Pennsylvania.



NEED NO SPECIAL LININGS

For all food products, petroleum products, and many chemicals, aluminum tanks need no expensive special linings, do not catalyze unstable compounds or form toxic or discoloring oxides, are non-sparking. Buffalo Electro-Chemical's 15 new tanks carry hydrogen peroxide.

ALCOA FIRST IN ALUMINUM

ALCOA ® ALUMINUM 1888 1948 60 YEARS OF SERVICE

IF YOU'VE EVER

DRIVEN ON A RIM . . .

you know what rubber does for riding

You know how rubber tires on your automobile absorb *vertical* bounce—give you a smooth, comfortable ride.

Railroad cars and ladings get the same type of protection, *horizontally,* when diesel and electric locomotives are equipped with NATIONAL Rubber-cushioned Draft Gears.

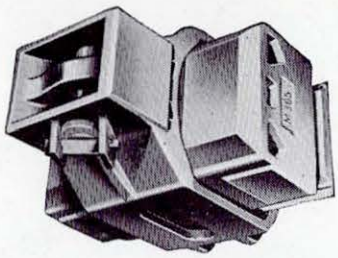
These gears are soft acting for slowly applied loads, with ample cushioning capacity under shock or impact. They have no tendency to creep under sustained loading, yet are continuously responsive during starting, running and stopping.

The results are positive protection for your cars and locomotives and increased safety for your ladings . . . gained through the resiliency of rubber.

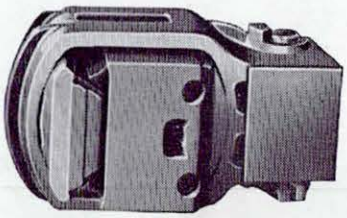
A further important advantage of NATIONAL Rubber-cushioned Draft Gears is that their shorter length lessens lateral wheel flange pressure on curves and crossovers . . . thus reducing wheel wear.

Added up—NATIONAL Rubber-cushioned Draft Gears offer continuous protection, softer, safer riding and less wheel-maintenance cost.

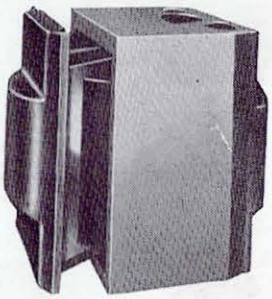
NATIONAL *Products*
FOR TRANSPORTATION AND INDUSTRY



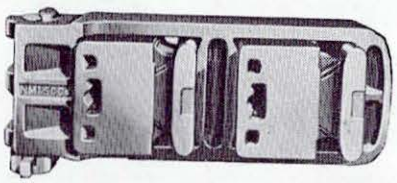
Type M-385 for extremely heavy diesel and electric freight locomotives



Type M-380 for heavy diesel passenger locomotives and electric freight locomotives



Type M-350-A for diesel passenger locomotives

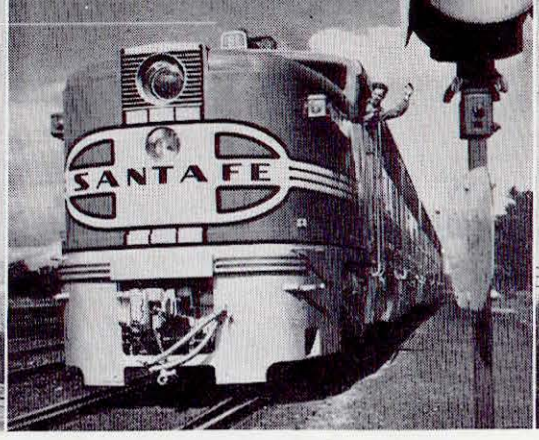


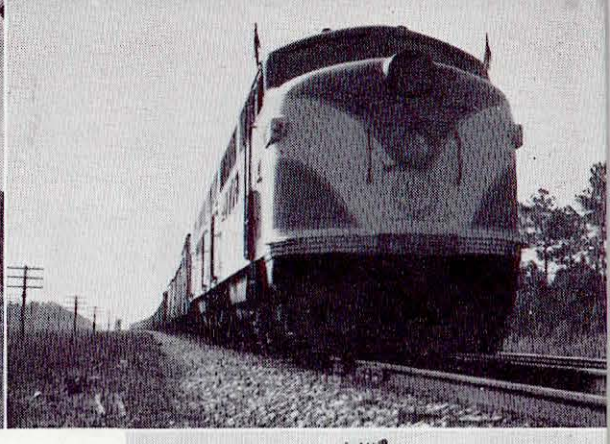
Type M-375 for diesel switching locomotives

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland, Ohio

1-A
HENRY
101
ERIE
700
Rock Island
8
Olympian Hiawatha
WESTERN PACIFIC
902
6004





All sheathed with

MET-L-WOOD

METAL BONDED TO PLYWOOD

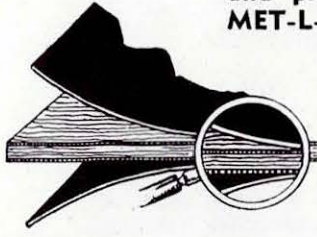
Carrying the insignia of America's leading railroads, these Diesels and 856 others, ordered last year by 60 railroads, have exterior sheathing and doors of MET-L-WOOD as standard construction.

This outstanding material has many particular advantages for railroad service, and is being widely used in luxury car interiors for panels, bulkheads, heading, wainscoting, doors, luggage shelves, cabinets, and table tops. It is ideally suited for caboose doors, for exterior and interior decorative construction of city ticket offices, and for modernizing existing station facilities.

MET-L-WOOD combines great strength for durability and safety with amazing lightness for economy. It can be worked almost as easily as ordinary wood, and requires minimum installation effort when prefabricated and processed to specific design requirements. It deadens sound, damps vibration, resists fire, and maintains a smooth surface in service, without buckling or warping.

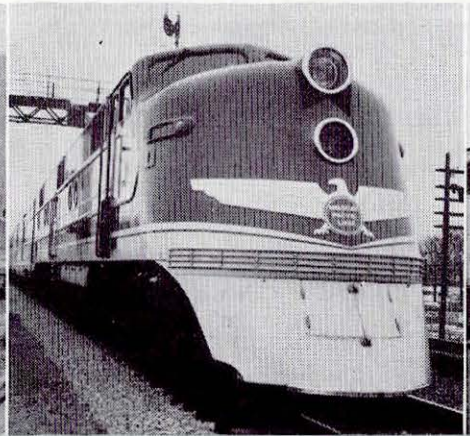
The story of MET-L-WOOD is told in a new 12-page brochure. A copy will be sent at your request.

Our engineering staff will gladly help you design and produce better and less costly products with MET-L-WOOD.

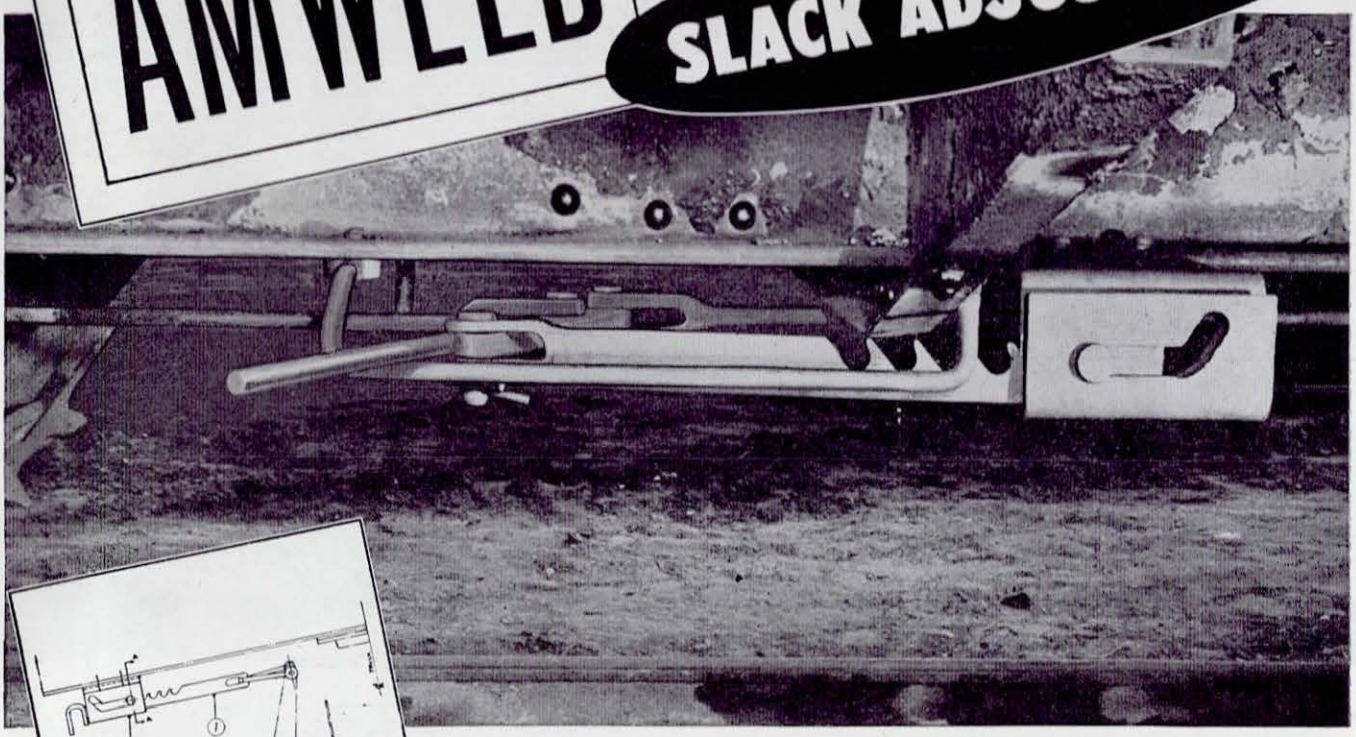


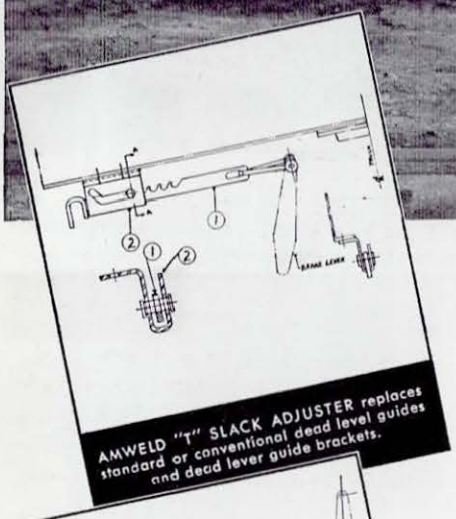
MET-L-WOOD CORPORATION

6755 West 65th Street, Chicago 38, Illinois

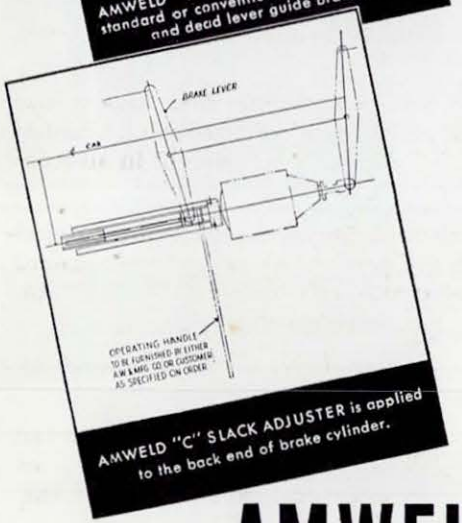


AMWELD SLACK ADJUSTERS





AMWELD "T" SLACK ADJUSTER replaces standard or conventional dead level guides and dead lever guide brackets.



AMWELD "C" SLACK ADJUSTER is applied to the back end of brake cylinder.

AMWELD SLACK ADJUSTERS assure safe and positive brake operation. Piston travel is maintained within the specified limits by a simple pull on a convenient lever.

AMWELD "B" SLACK ADJUSTER, shown above, is applied with operating handle extending toward the side sill at or near the center of the car. It may be applied to box, gondola, certain types of flat cars and hopper cars where sufficient clearance is available between hoppers. AMWELD TYPE "T" SLACK ADJUSTER can be applied to any type of freight car equipped with bottom rod under bolster. TYPE "C" is particularly adaptable to cars equipped with floating center sills.

Please write for complete information and prices.

Applications of "AMWELD" Slack Adjusters have been made on these railroads:

Chesapeake and Ohio Railway Company • Cudahy Car Lines • Delaware and Hudson Railroad Corporation • Erie Railroad Company • Ford Motor Company • General American Transportation Corp. • Mather Stock Car Co. • New York Central System • New York, New Haven & Hartford Railroad Co. • Norfolk and Western Railway Company • North American Car Corporation • Union Railway Co. • Virginia Railway Co. • Wheeling and Lake Erie Railway Company... and orders have been received from... Baltimore snd Ohio Railroad Interstate Railroad Company • Southern Railway System.

AMWELD RAILWAY EQUIPMENT

DIVISION OF

THE AMERICAN WELDING & MANUFACTURING COMPANY

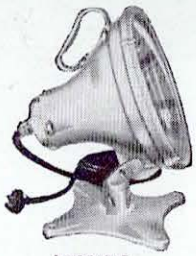
250 DIETZ ROAD • WARREN, OHIO

Specify— PYLE-NATIONAL FLOODLIGHTS

for Permanent Heavy-Duty Floodlighting

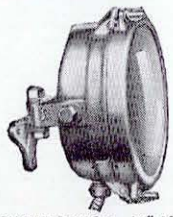
10"-12"-14"-16"-18"-23"
for 100 to 2000 watt lamps

Dependable Floodlighting with Minimum Maintenance



PORTABLE
10"-12"-14"-16"
100 to 1000 watts

FLUSH—10" for Pit or Subway Wall or Ceiling
100-150-200 watts



SHORT RANGE—10"-12"
for Wall Mounting
100-150-200 watts

Pyle-National floodlight equipment is designed and constructed to withstand the most severe operating conditions. Complete range of types and sizes are available.

RUGGED cast aluminum housings with tight sealing doors and door glass joints—positively dust proof and moisture proof—give maximum protection to reflectors and lamps and reduce cleaning and other maintenance to an absolute minimum.

STRONG, galvanized cast iron bases and brackets of many types are provided for simple mounting and accurate adjustment in all locations.

ADVANCED DESIGN of the carefully molded and highly polished reflectors and lenses insure the highest optical efficiency—thoroughly annealed for maximum toughness.

Write for catalog 2100 giving complete information.

The services of our trained and experienced floodlighting specialists are available at all times to advise and assist in installation problems.

SINCE 1897

THE PYLE-NATIONAL COMPANY

1356 NORTH KOSTNER AVENUE, CHICAGO 51, ILLINOIS

Offices: New York • Baltimore • Pittsburgh • St. Louis • St. Paul • San Francisco • Cleveland
Export Department: International Railway Supply Co., New York • Canadian Agent: The Holden Co., Ltd., Montreal

CONDUIT FITTINGS • PLUGS and RECEPTACLES • TURBO-GENERATORS • LOCOMOTIVE HEADLIGHTS • MULTI-VENT

First line of

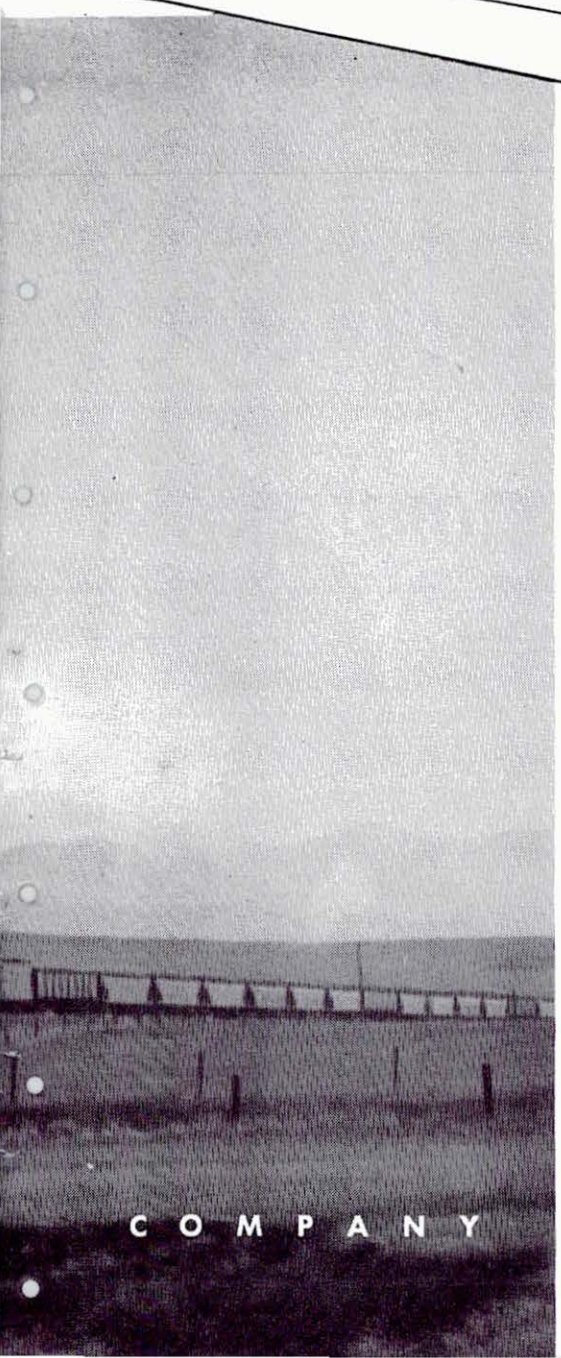
A.A.R. Approved

PEERLESS EQUIPMENT

defense against SHOCK

PEERLESS H-1-B 2

DRAFT GEAR



Fortify your freight cars and lading against damage losses with PEERLESS H-1-B2 Draft Gears. They assure better operation of cars under all traffic conditions.

1. SMOOTH ACTION
2. POSITIVE RELEASE
3. LOW RECOIL
4. HIGH ABSORPTION

5. LIGHT WEIGHT – permitting heavier payloads
6. LONG LIFE – because of rugged construction
7. TROUBLE FREE – resulting from sound engineering and careful manufacture

A streamlined light weight draft gear for heavy duty service.

332 South Michigan Avenue Chicago 4, Illinois

For Comfort in the Caboose

insulate with Johns-Manville STONEFELT

THE same advantages which make Stonefelt the ideal insulation for the modern passenger car, adapt it equally well to the job of insulating the modern steel caboose.

Applied in blanket form between the car's exterior and its interior, Stonefelt provides sealed-in comfort regardless of outdoor weather. Strong and light in weight, it is resistant to both fire and moisture. Made of interwoven, specially treated mineral fibres that are very small in diameter and of exceptional resiliency, Stonefelt retains its rated thickness and will not settle even under severe vibration. Its thermal conductivity remains low, its acoustical efficiency high in service.

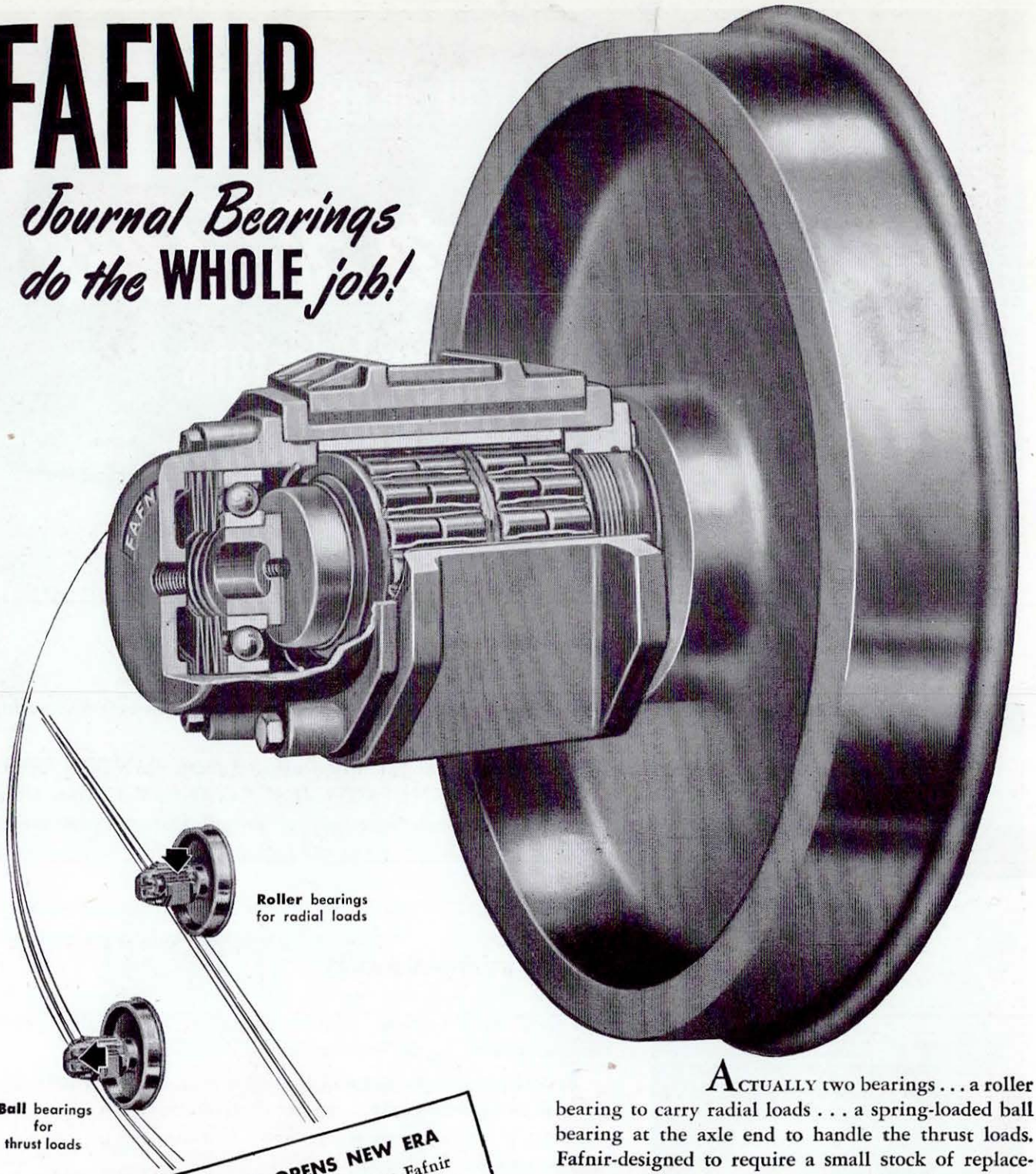
Let us tell you how little it will cost to build "passenger-car" comfort into your new cabooses with Stonefelt. For full information, address Johns-Manville, Box 290, New York 16, New York.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville **90 YEARS OF SERVICE TO TRANSPORTATION**

FAFNIR

Journal Bearings do the WHOLE *job!*



GREASE LUBRICATION OPENS NEW ERA

Already well past the experimental stage Fafnir Grease-Lubricated Railway Journal Bearings are proving their superiority on several leading roads. Advantages of Grease Lubrication include: lighter, more compact bearing design, longer periods between relubrication, less lubricant loss, reduced maintenance cost, protection of bearing against corrosion during inactive periods and more satisfactory all-year-'round lubrication.

ACTUALLY two bearings . . . a roller bearing to carry radial loads . . . a spring-loaded ball bearing at the axle end to handle the thrust loads. Fafnir-designed to require a small stock of replacement equipment . . . to permit assembly without special tools . . . to take far less maintenance, as much as two-thirds less. Starting loads reduced up to 90%. More than two million miles of use by leading roads proves the advantages of these Fafnir Railway Journal Bearings for the new era of railroad progress.

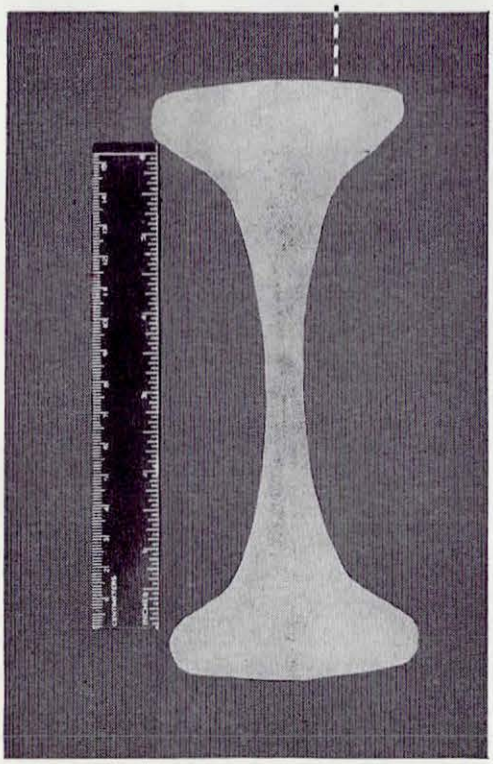
FAFNIR BALL & ROLLER JOURNAL BEARINGS

The Fafnir Bearing Company New Britain, Conn.

I-BEAM EQUALIZER OF NICKEL ALLOY STEEL

Weighs 30 to 50% Less

than conventional designs of equal strength



CROSS SECTION OF FORGED I-BEAM EQUALIZER

By using a closed-die forging process, in conjunction with huge drop hammer equipment, CANTON DROP controls flow and metal structure. In addition, improved heat-treating methods give these I-beam equalizers the strength and safety heretofore found only in parts of much greater cross sectional area.

Here's a development that frees *your* locomotives from hauling tons of useless dead weight.

Using high strength nickel alloyed steel, CANTON DROP FORGING & MANUFACTURING COMPANY, Canton, Ohio, now produces equalizer bars of forged I-beam construction. Weight per equalizer is cut from 30 to 50% on certain types and sizes.

For example, weight of the I-beam equalizer, shown above, is only 405 pounds . . . whereas one of conventional design and equal strength weighs 800 pounds.

Type 9840 nickel-chromium-molybdenum steel was adopted for these weight-saving equalizers because of its high strength and toughness in the heat-treatment condition.

Experience proves that nickel alloy steels permit the reduction of bulk and dead weight . . . without sacrifice of strength or safety. Ask us for information about their advantages for specific applications.

MORE SCRAP—MORE STEEL
Move Your Scrap Now!

EMBLEM OF INCO SERVICE
TRADE MARK

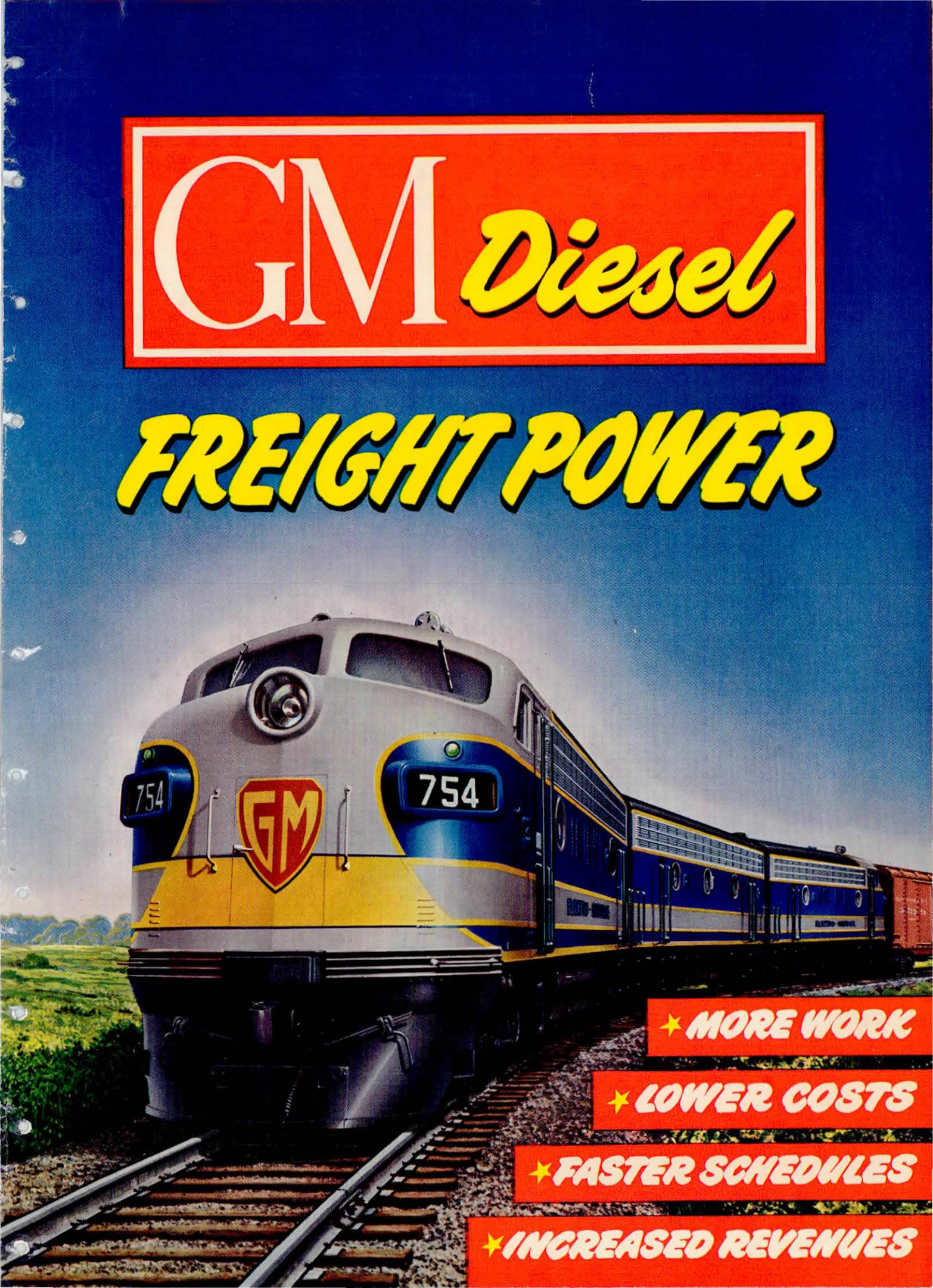
Over the years, International Nickel has accumulated a fund of useful information on the properties, treatment, fabrication and performance of engineering alloy steels, stainless steels, cast irons, brasses, bronzes, nickel silver, cupro-nickel and other alloys containing nickel. This information is yours for the asking. Write for "List A" of available publications.

THE INTERNATIONAL NICKEL COMPANY, INC.

67 WALL STREET
NEW YORK 5, N. Y.

GM Diesel

FREIGHT POWER



★ MORE WORK

★ LOWER COSTS

★ FASTER SCHEDULES

★ INCREASED REVENUES

The
GENERAL MOTORS LOCOMOTIVE

A Remarkable Factor in the Nation's Transportation Progress

AMERICAN railroads deserve high tribute for their amazing achievements in the movement of the nation's business. In 1947 the average number of tons of freight handled per train exceeded all previous records.

This outstanding performance is potent evidence of the heavier train loads and faster schedules made possible with General Motors Diesel Freight locomotives. Altogether, General Motors Diesel-powered freight trains operate on schedules calling for more than 150 billion gross-ton-miles per year.

In the wide range General Motors F3 locomotive, railroads have what has proved to be the most versatile power unit on the rails, incorporating the latest, most advanced improvements in Diesel locomotive design, construction and performance.

Powered by the widely used, time-proved 2-cycle General Motors Diesel engine, the F3 operates as a 1500, 3000, 4500 or 6000 horsepower locomotive. It is equipped with DC-AC generator providing alternating current for auxiliaries for the first time in any Diesel locomotive.

By a simple, relatively inexpensive change of gear ratios, the F3 locomotive can be equipped to give full rated performance over a range of services from the heaviest tonnage freight to combination freight and passenger, to hundred-mile-an-hour heavy duty passenger.

Never before in all railroad history has any type of motive power provided so many possibilities for operating efficiencies and economy in fast scheduled, high tonnage, revenue building service.

Here you see a line-up of the General Motors Diesel locomotives which are setting the pace for rapid, dependable and economical hauling of freight on United States railroads.

ABERDEEN AND ROCK FISH

On-time schedules, high availability, low maintenance and operating costs with the versatile General Motors F3 are of vital importance on this short line between Aberdeen and Fayetteville, N.C.

BALTIMORE AND OHIO

Baltimore and Ohio employs General Motors Diesel locomotives for fast freight movements between the cities of thirteen Eastern states. B&O provides peak performance in its carload shipping.

CHICAGO, BURLINGTON & QUINCY

The Burlington Lines, whose "Pioneer Zephyr" was America's first Diesel streamlined train, use General Motors Freight Diesels in stepped-up schedules marked by high locomotive availibility.

CHICAGO AND NORTH WESTERN

The "North Western" serves the Midwest with a fleet of crack, General Motors Diesel-powered freight trains, as well known to shippers as its famous "400" passenger trains are to travelers.

ATCHISON, TOPEKA AND SANTA FE

First railroad to use General Motors Diesels in main line freight service, the Santa Fe now operates 276 GM Diesel Freight units. Gives seventh morning freight service from Chicago to the Coast.

BANGOR AND AROOSTOOK

Serving Northern Maine with General Motors Diesel locomotives, Bangor and Aroostook provides faster, more efficient transportation of this area's output of potatoes, pulpwood, newsprint and lumber.

CHICAGO GREAT WESTERN

Noted for its splendid service throughout the busy "Corn Belt Circle," Chicago Great Western recently added six new General Motors Diesel locomotives to make a great service even better.

CHICAGO, ROCK ISLAND AND PACIFIC

Reducing substantially the running time between Chicago and the Pacific Coast, the Rock Island's high speed "Rocket Freight" service is built around the performance of GM Diesel locomotives.

ATLANTIC COAST LINE

Serving the rapidly growing industrial section along the Atlantic seacoast, the Atlantic Coast Line builds for the coming needs of the South with its fleet of General Motors Diesel Freight locomotives.

BOSTON AND MAINE

One of the most completely Dieselized railroads in the nation, the Boston and Maine now handles approximately 80% of all gross-ton-miles with its fleet of General Motors Diesel locomotives.

CHICAGO, INDIANAPOLIS AND LOUISVILLE

Modernization with General Motors Diesels will make the Monon the first completely Diesel-powered railroad of its size. New freight schedules provide overnight service between all points on the lines.

DELAWARE, LACKAWANNA & WESTERN

For faster, smoother freight service on the Route of the Phoebe Snow, the Lackawanna uses a fleet of General Motors Diesel Freight locomotives for perfect shipping overland and to ship-side.

ATLANTIC AND EAST CAROLINA

First short line to inaugurate main line Diesel road power by installing two General Motors Diesel F3 units in July, 1946. Serves a rich agricultural area which is interspersed with industry.

CENTRAL OF GEORGIA

Keeping pace with the record industrial expansion of the Southeast, the Central of Georgia is using General Motors Diesel power for fast, dependable freight movements over its 1815 miles of track.

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC

General Motors Diesels help keep heavy flow of freight moving with ever increasing speed and dependability in the continuing program of The Milwaukee Road for improved freight service.

DENVER AND RIO GRANDE WESTERN

On the rugged main line Moffat Tunnel route between Denver and Salt Lake City, General Motors Diesels produce approximately 20% more gross-ton-miles per train hour than the other schedules.

RAILROADS LISTED ARE THOSE HAVING GENERAL MOTORS DIESEL FREIGHT LOCOMOTIVES IN SERVICE AS OF JANUARY 31, 1948

GENERAL MOTORS LOCOMOTIVES

POWER...

for greater tonnage-hauling capacity

GENERAL MOTORS LOCOMOTIVES

SPEED...

for faster schedules with maximum safety

ERIE

Six 5400 horsepower General Motors Freight Diesels haul 80% more tonnage than locomotives previously used, permitting handling of through trains east and west without reducing tonnage.

KANSAS CITY SOUTHERN

A growing fleet of General Motors F3 locomotives providing powerful, fast and efficient service speeds transportation of vital resources in the six states served by Kansas City Southern Lines.

GREAT NORTHERN

Thirty General Motors Diesel Freight locomotives on the Great Northern haul heavy freight trains over mountain terrain in service between the Great Lakes and the Pacific Northwest.

LEHIGH VALLEY

Two 5400 horsepower General Motors Diesels do the work of 12 steam helper locomotives—helping long freight trains climb steep Wilkes-Barre Mountain at greater speed than formerly attained.

GULF, MOBILE AND OHIO

General Motors Diesels handling GM&O main line freight between St. Louis and Chicago are setting new records for superior work, high availability and low operating and maintenance costs.

MINNEAPOLIS & ST. LOUIS

Modern motive power, a fleet of General Motors Diesel Freight locomotives, helps the Minneapolis & St. Louis Railway fulfill its pledge of fast, dependable freight service for the Midwest.

JERSEY CENTRAL LINES

The substantial gains in gross-ton-miles per train hour reflect the increased efficiency resulting from the operation of General Motors Diesel Freight locomotives on Jersey Central Lines.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE

Fast, powerful and dependable, General Motors Freight Diesels give new emphasis to the Soo Line slogan—"Strong on Speed and Strong on Service."

PULL HERE

GENERAL MOTORS LOCOMOTIVES

HIGH AVAILABILITY...

with minimum "time-outs" for servicing

600 H.P. GM DIESEL SWITCHER

1000 H.P. GM DIESEL SWITCHER

GENERAL MOTORS DIESELS

The Dependable Motive Power

Speed Handling • Reduce Operating Costs • Increase Revenues

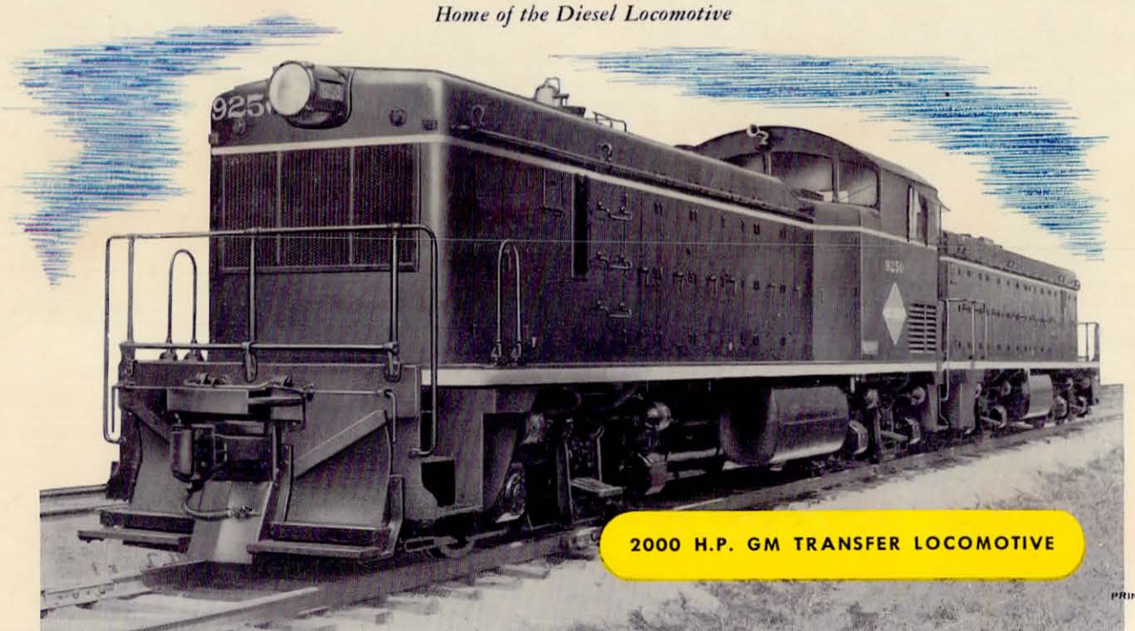
MORE than 1200 General Motors Diesels of 600 to 2000 H.P. in yard switching and transfer service, with over 46 million service hours, are providing outstanding economies, delivering greater starting effort, superior flexibility, high availability (*national average 94%*), more work output, greater safety, smooth starts and stops. For shippers this means more efficient service . . faster deliveries . . greater protection to lading. For the railroads it means lower operating costs, savings in fuel . . servicing . . repairs . . and fewer locomotives required to meet present-day demands. GM Diesel Switchers provide maximum visibility for operators, quietness of operation, quick accessibility of parts for service or replacement, and high interchangeability of parts with other General Motors locomotives.

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION

GENERAL MOTORS — LA GRANGE, ILL.

Home of the Diesel Locomotive



2000 H.P. GM TRANSFER LOCOMOTIVE

PRINTED IN U.S.A.

ABERDEEN AND ROCK FISH

On-time schedules, high availability, low maintenance and operating costs with the versatile General Motors F3 are of vital importance on this short line between Aberdeen and Fayetteville, N.C.

BALTIMORE AND OHIO

Baltimore and Ohio employs General Motors Diesel locomotives for fast freight movements between the cities of thirteen Eastern states. B&O provides peak performance in its carload shipping.

CHICAGO, BURLINGTON & QUINCY

The Burlington Lines, whose "Pioneer Zephyr" was America's first Diesel streamlined train, use General Motors Freight Diesels in stepped-up schedules marked by high locomotive availability.

CHICAGO AND NORTH WESTERN

The "North Western" serves the Midwest with a fleet of crack, General Motors Diesel-powered freight trains, as well known to shippers as its famous "400" passenger trains are to travelers.

ERIE

Six 5400 horsepower General Motors Freight Diesels haul 80% more tonnage than locomotives previously used, permitting handling of through trains east and west without reducing tonnage.

KANSAS CITY SOUTHERN

A growing fleet of General Motors F3 locomotives providing powerful, fast and efficient service speeds transportation of vital resources in the six states served by Kansas City Southern Lines.

ATCHISON, TOPEKA AND SANTA FE

First railroad to use General Motors Diesels in main line freight service, the Santa Fe now operates 276 GM Diesel Freight units. Gives seventh morning freight service from Chicago to the Coast.

BANGOR AND AROOSTOOK

Serving Northern Maine with General Motors Diesel locomotives, Bangor and Aroostook provides faster, more efficient transportation of this area's output of potatoes, pulpwood, newsprint and lumber.

CHICAGO GREAT WESTERN

Noted for its splendid service throughout the busy "Corn Belt Circle," Chicago Great Western recently added six new General Motors Diesel locomotives to make a great service even better.

CHICAGO, ROCK ISLAND AND PACIFIC

Reducing substantially the running time between Chicago and the Pacific Coast, the Rock Island's high speed "Rocket Freight" service is built around the performance of GM Diesel locomotives.

GREAT NORTHERN

Thirty General Motors Diesel Freight locomotives on the Great Northern haul heavy freight trains over mountain terrain in service between the Great Lakes and the Pacific Northwest.

LEHIGH VALLEY

Two 5400 horsepower General Motors Diesels do the work of 12 steam helper locomotives—helping long freight trains climb steep Wilkes-Barre Mountain at greater speed than formerly attained.

ATLANTIC COAST LINE

Serving the rapidly growing industrial section along the Atlantic seacoast, the Atlantic Coast Line builds for the coming needs of the South with its fleet of General Motors Diesel Freight locomotives.

BOSTON AND MAINE

One of the most completely Dieselized railroads in the nation, the Boston and Maine now handles approximately 80% of all gross-ton-miles with its fleet of General Motors Diesel locomotives.

CHICAGO, INDIANAPOLIS AND LOUISVILLE

Modernization with General Motors Diesels will make the Monon the first completely Diesel-powered railroad of its size. New freight schedules provide overnight service between all points on the lines.

DELAWARE, LACKAWANNA & WESTERN

For faster, smoother freight service on the Route of the Phoebe Snow, the Lackawanna uses a fleet of General Motors Diesel Freight locomotives for perfect shipping overland and to ship-side.

GULF, MOBILE AND OHIO

General Motors Diesels handling GM&O main line freight between St. Louis and Chicago are setting new records for superior work, high availability and low operating and maintenance costs.

MINNEAPOLIS & ST. LOUIS

Modern motive power, a fleet of General Motors Diesel Freight locomotives, helps the Minneapolis & St. Louis Railway fulfill its pledge of fast, dependable freight service for the Midwest.

ATLANTIC AND EAST CAROLINA

First short line to inaugurate main line Diesel road power by installing two General Motors Diesel F3 units in July, 1946. Serves a rich agricultural area which is interspersed with industry.

CENTRAL OF GEORGIA

Keeping pace with the record industrial expansion of the Southeast, the Central of Georgia is using General Motors Diesel power for fast, dependable freight movements over its 1815 miles of track.

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC

General Motors Diesels help keep heavy flow of freight moving with ever increasing speed and dependability in the continuing program of The Milwaukee Road for improved freight service.

DENVER AND RIO GRANDE WESTERN

On the rugged main line Moffat Tunnel route between Denver and Salt Lake City, General Motors Diesels produce approximately 20% more gross-ton-miles per train hour than the other schedules.

JERSEY CENTRAL LINES

The substantial gains in gross-ton-miles per train hour reflect the increased efficiency resulting from the operation of General Motors Diesel Freight locomotives on Jersey Central Lines.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE

Fast, powerful and dependable, General Motors Freight Diesels give new emphasis to the Soo Line slogan—"Strong on Speed and Strong on Service."

PULL HERE

RAILROADS LISTED ARE THOSE HAVING GENERAL MOTORS DIESEL FREIGHT LOCOMOTIVES IN SERVICE AS OF JANUARY 31, 1948

GENERAL MOTORS LOCOMOTIVES

POWER...

for greater tonnage-hauling capacity

GENERAL MOTORS LOCOMOTIVES

SPEED...

for faster schedules with maximum safety

GENERAL MOTORS LOCOMOTIVES

HIGH AVAILABILITY...

with minimum "time-outs" for servicing

MISSOURI-KANSAS-TEXAS

Serving the Southwest, the Katy "gets it there in a hurry." Its fleet of General Motors Diesel Freight locomotives power the crack Katy freights at speeds approaching those of passenger trains.

NORTHERN PACIFIC

In 1947 Northern Pacific substantially increased its fleet of General Motors Freight Diesels, adding plenty of muscle to hustle long loads at express speeds or scale mile-high mountains with ease.

ST. LOUIS-SOUTHWESTERN

On the Cotton Belt Route, five General Motors Freight locomotives have averaged extremely high gross-ton-miles since 1944—establishing a new tempo of dependable, revenue-building operation.

TOLEDO, PEORIA & WESTERN

The new General Motors Diesel-powered "Prairie Marksman" streaks straight across the heart of Illinois, cutting time for East-West freight shippers over the direct route of The Peoria Road.

MISSOURI PACIFIC

Six General Motors Freight Diesels operating the 564 miles between Osawatomie, Kans., and Pueblo, Colo., increased average train load 20%, decreased freight train miles 15%.

PENNSYLVANIA

GM Diesels occupy an important place in vast modernization program of The Pennsylvania Railroad—18 miles of new freight cars to handle more freight; new GM Diesel power to move it.

SEABOARD AIR LINE

The Seaboard Air Line Railroad operates General Motors Diesel Freight locomotives in services designed for continuing on-time dependability and for speedier, more efficient handling.

UNION PACIFIC

Union Pacific's large fleet of General Motors locomotives grew out of America's first streamlined train, the "City of Salina," which had a distillate engine power plant built by Electro-Motive.

NEW YORK CENTRAL

New General Motors Diesel Freight locomotives haul freight trains on the New York Central, providing rapid, smooth and dependable service between Atlantic Coast ports and the Great Lakes.

READING

One of the most important terminal, bridge and interchange lines, the Reading employs General Motors Freight locomotives to speed handling of freight through 43 connections with other carriers.

SOUTHERN

A large fleet of General Motors Diesel Freight locomotives is helping the Southern establish an enviable record for rapid delivery of freight from the South and Southeast to the Eastern seaboard.

WESTERN MARYLAND

General Motors Diesel Freight power is used in the Baltimore area by the Western Maryland Railway . . . a speedy and vital link in several natural routes between heavy traffic producing centers.

NEW YORK, ONTARIO & WESTERN

Delivery of additional General Motors locomotives this year will enable the NYO&W to retire its remaining steam power. The need for helper service has been eliminated on main line freight hauls.

ST. LOUIS-SAN FRANCISCO

New General Motors Diesel Freight locomotives are being added to the motive power fleet of the Frisco to make Frisco Dependable Freight even more dependable and increase benefits to shippers.

SOUTHERN PACIFIC

Southern Pacific is using General Motors Diesel Freight locomotives for an increasing number of freight trains across the Southwest, a distance of more than 800 miles between Los Angeles and El Paso.

WESTERN PACIFIC

By reliably hauling more tonnage faster, General Motors Diesel Freight locomotives are credited with being a major factor in enabling the Western Pacific to handle its war-doubled freight volume.

GENERAL MOTORS LOCOMOTIVES

ECONOMY...

in fuel costs and supporting services

GENERAL MOTORS LOCOMOTIVES

REVENUES INCREASED...

by lower operating costs

600 H.P. GM DIESEL SWITCHER

1000 H.P. GM DIESEL SWITCHER

GENERAL MOTORS DIESELS

The Dependable Motive Power

Speed Handling • Reduce Operating Costs • Increase Revenues

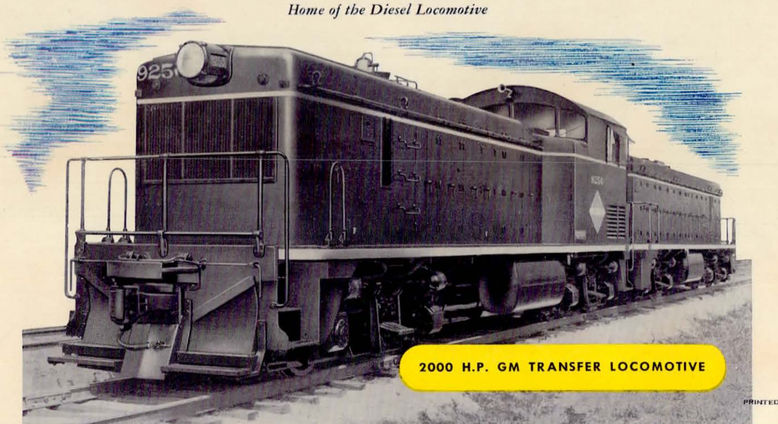
MORE than 1200 General Motors Diesels of 600 to 2000 H.P. in yard switching and transfer service, with over 46 million service hours, are providing outstanding economies, delivering greater starting effort, superior flexibility, high availability (*national average 94%*), more work output, greater safety, smooth starts and stops. For shippers this means more efficient service . . faster deliveries . . greater protection to lading. For the railroads it means lower operating costs, savings in fuel . . servicing . . repairs . . and fewer locomotives required to meet present-day demands. GM Diesel Switchers provide maximum visibility for operators, quietness of operation, quick accessibility of parts for service or replacement, and high interchangeability of parts with other General Motors locomotives.

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION

GENERAL MOTORS — LA GRANGE, ILL.

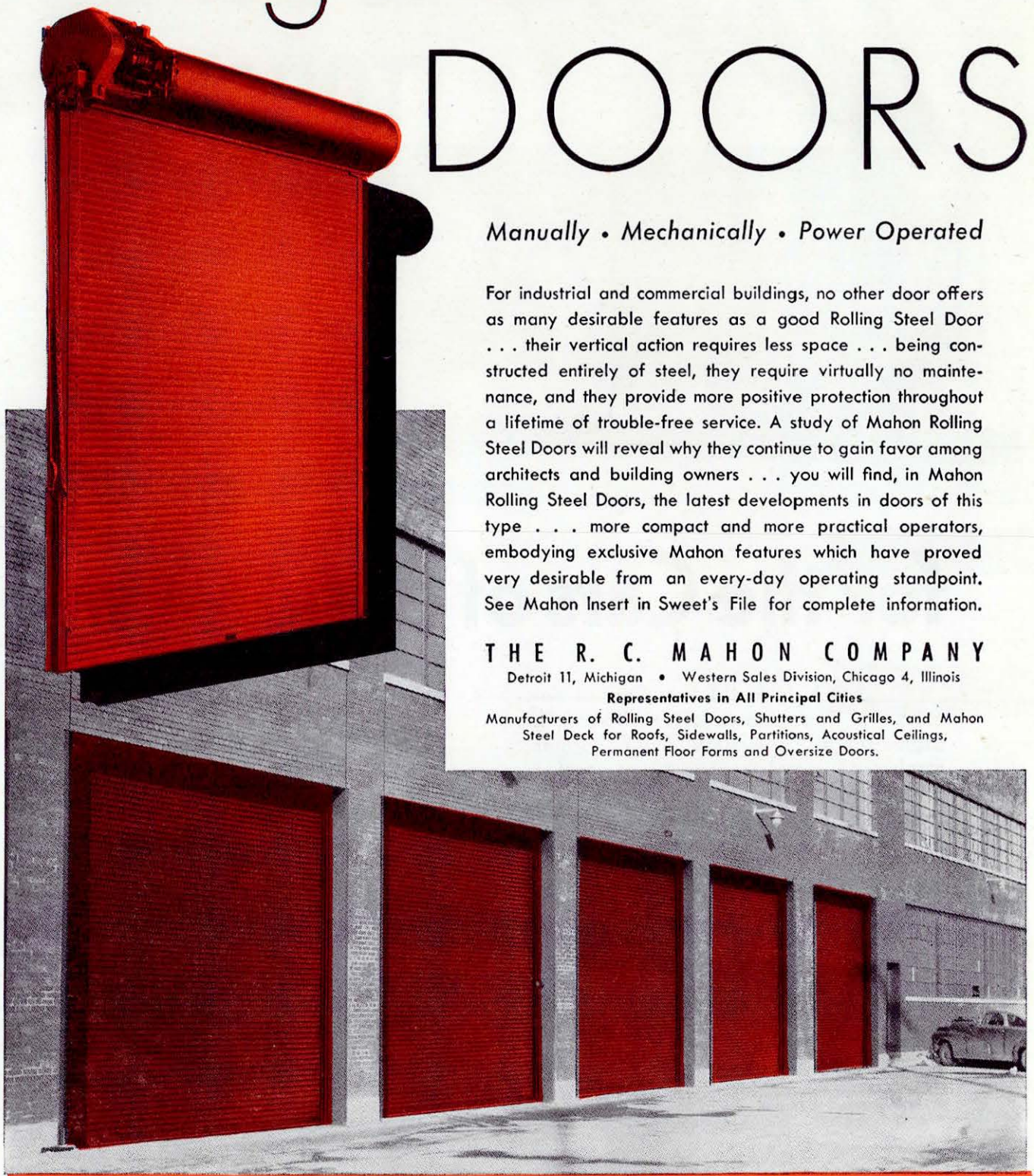
Home of the Diesel Locomotive



2000 H.P. GM TRANSFER LOCOMOTIVE

PRINTED IN U.S.A.

Rolling Steel DOORS



Manually • Mechanically • Power Operated

For industrial and commercial buildings, no other door offers as many desirable features as a good Rolling Steel Door . . . their vertical action requires less space . . . being constructed entirely of steel, they require virtually no maintenance, and they provide more positive protection throughout a lifetime of trouble-free service. A study of Mahon Rolling Steel Doors will reveal why they continue to gain favor among architects and building owners . . . you will find, in Mahon Rolling Steel Doors, the latest developments in doors of this type . . . more compact and more practical operators, embodying exclusive Mahon features which have proved very desirable from an every-day operating standpoint. See Mahon Insert in Sweet's File for complete information.

THE R. C. MAHON COMPANY

Detroit 11, Michigan • Western Sales Division, Chicago 4, Illinois

Representatives in All Principal Cities

Manufacturers of Rolling Steel Doors, Shutters and Grilles, and Mahon Steel Deck for Roofs, Sidewalls, Partitions, Acoustical Ceilings, Permanent Floor Forms and Oversize Doors.

ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

MAHON

Yoloy IS HERE TODAY »

for the Cars of tomorrow

To help build the Cars of Tomorrow, Youngstown offers Yoloy, a high-strength, low-alloy nickel-copper steel, used in rail transportation service for more than 12 years. It affords three important advantages:

1. Because of its extreme toughness and strength, Yoloy can be used in thinner sheets and lighter structural members than usual, without loss of over-all strength. These important physical properties of high-strength Yoloy contribute directly to the advantages of lighter weight construction and elimination of cost increase due to dead weight.
2. Yoloy, due to its nickel-copper content, has unusual ability to resist corrosion. This characteristic contributes to lower maintenance and longer useful life, as well as to increased safety and better appearance.
3. Yoloy forms easily and welds readily. Its ability to resist both shock and abrasion is high. These properties mean lower construction costs and less maintenance expense--factors to be considered in this era of high and still rising costs.

Yoloy is available in the form of plates, sheets, strip, shapes, hot and cold finished bars, seamless and electric weld pipe.

QUALITY YOUNGSTOWN SERVICE

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

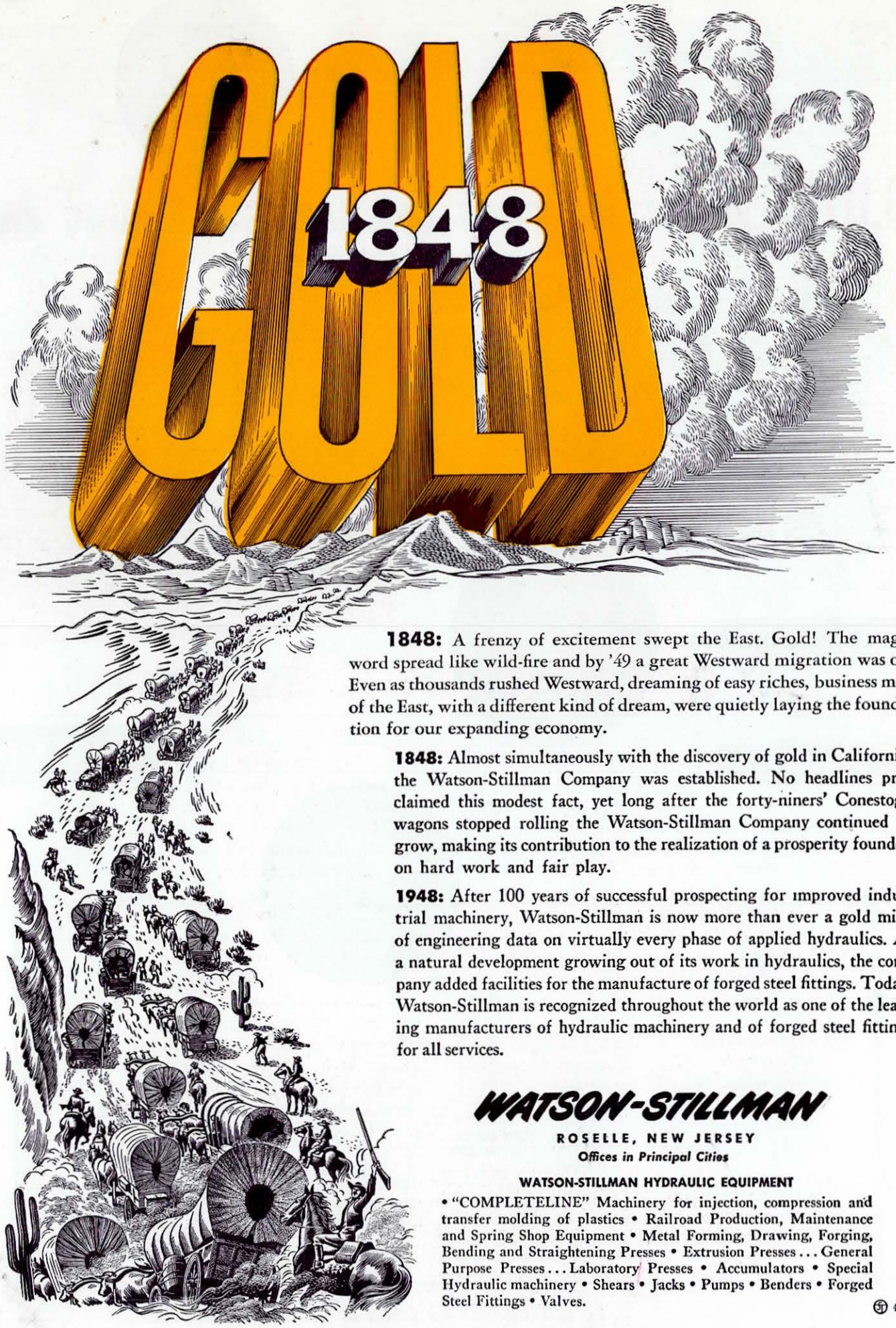
GENERAL OFFICES - YOUNGSTOWN 1, OHIO

Export Offices - 500 Fifth Avenue, New York City

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Sheets - Plates - Pipe and Tubular Products - Bars - Rods - Wire - Cold Finished Carbon and Alloy Bars - Tie Plates and Spikes - Conduit - Electrolytic Tin Plate - Coke Tin Plate.



1848: A frenzy of excitement swept the East. Gold! The magic word spread like wild-fire and by '49 a great Westward migration was on. Even as thousands rushed Westward, dreaming of easy riches, business men of the East, with a different kind of dream, were quietly laying the foundation for our expanding economy.

1848: Almost simultaneously with the discovery of gold in California, the Watson-Stillman Company was established. No headlines proclaimed this modest fact, yet long after the forty-niners' Conestoga wagons stopped rolling the Watson-Stillman Company continued to grow, making its contribution to the realization of a prosperity founded on hard work and fair play.

1948: After 100 years of successful prospecting for improved industrial machinery, Watson-Stillman is now more than ever a gold mine of engineering data on virtually every phase of applied hydraulics. As a natural development growing out of its work in hydraulics, the company added facilities for the manufacture of forged steel fittings. Today, Watson-Stillman is recognized throughout the world as one of the leading manufacturers of hydraulic machinery and of forged steel fittings for all services.

WATSON-STILLMAN

ROSELLE, NEW JERSEY

Offices in Principal Cities

WATSON-STILLMAN HYDRAULIC EQUIPMENT

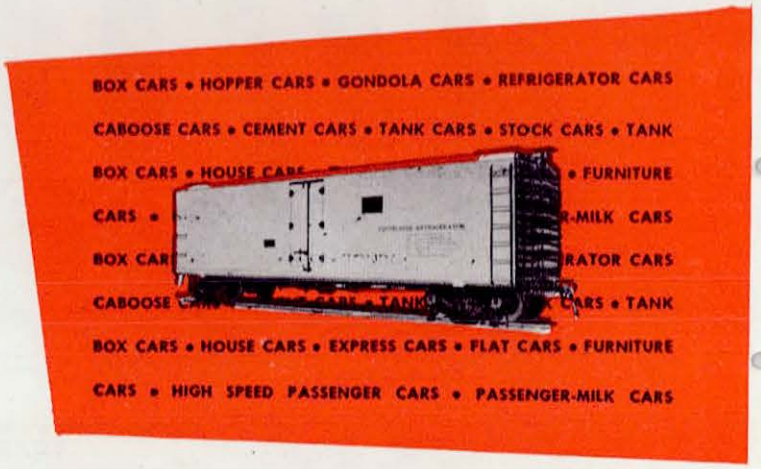
• "COMPLETELINE" Machinery for injection, compression and transfer molding of plastics • Railroad Production, Maintenance and Spring Shop Equipment • Metal Forming, Drawing, Forging, Bending and Straightening Presses • Extrusion Presses . . . General Purpose Presses . . . Laboratory Presses • Accumulators • Special Hydraulic machinery • Shears • Jacks • Pumps • Benders • Forged Steel Fittings • Valves.

4131

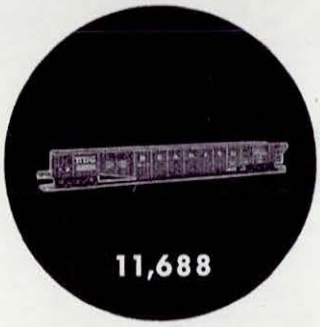
BOX CARS

80,070 CARS OF ALL TYPES ARE CARRYING LADING AND

HOPPERS


BOX CARS • HOPPER CARS • GONDOLA CARS • REFRIGERATOR CARS
CABOOSE CARS • CEMENT CARS • TANK CARS • STOCK CARS • TANK
BOX CARS • HOUSE CARS
• FURNITURE
CARS •
-MILK CARS
BOX CAR
RATOR CARS
CABOOSE
CARS • TANK
BOX CARS • HOUSE CARS • EXPRESS CARS • FLAT CARS • FURNITURE
CARS • HIGH SPEED PASSENGER CARS • PASSENGER-MILK CARS

GONDOLAS



THEY'RE

OTHER TYPES

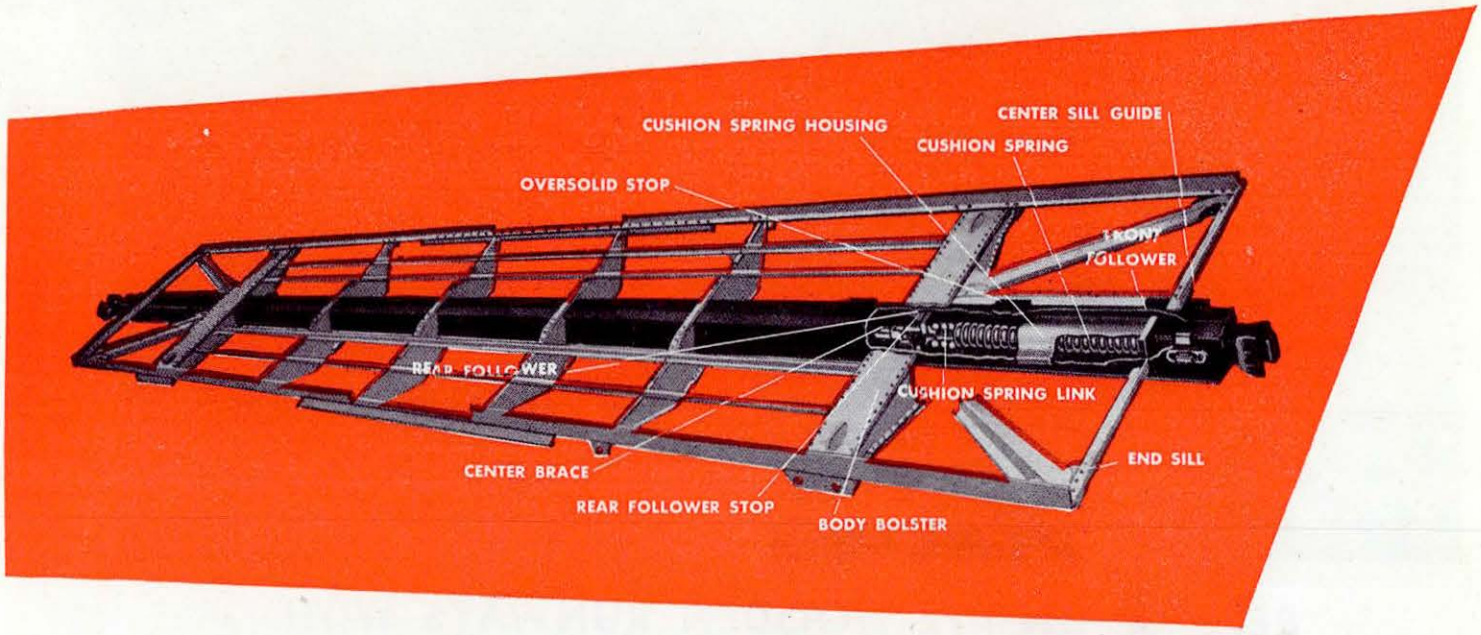
CAR OPERATORS USING DURYEA UNDERFRAME

ATCHISON, TOPEKA & SANTA FE
BALTIMORE & OHIO
BOSTON & MAINE
BESSEMER & LAKE ERIE
CHICAGO GREAT WESTERN
CHICAGO & NORTHWESTERN
CHICAGO, ROCK ISLAND & PACIFIC
CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA
CHESAPEAKE & OHIO
CENTRAL RAILROAD OF NEW JERSEY
CENTRAL RAILROAD OF PENNSYLVANIA
CHICAGO & EASTERN ILLINOIS
DENVER & RIO GRANDE WESTERN
GENERAL AMERICAN TRANSPORTATION CORPORATION
GULF REFINING COMPANY
HIGH POINT, THOMASVILLE & DENTON
ILLINOIS CENTRAL
IRON MINES COMPANY OF VENEQUELA
LINDE AIR PRODUCTS COMPANY
LEHIGH VALLEY
LEHIGH & NEW ENGLAND
LEHIGH & HUDSON
MISSOURI PACIFIC
MAINE CENTRAL
NEW YORK CENTRAL
NORFOLK & WESTERN
PERE MARQUETTE
PENN CONLEY TANK CAR CO.
PITTSBURGH & WEST VIRGINIA
PENNSYLVANIA
READING
ST. LOUIS & SAN FRANCISCO
UNITED STATES ARMY
UNITED STATES NAVY
UNITED STATES WAR DEPT.
VISCOSE COMPANY
WESTERN MARYLAND
YOUNGSTOWN SHEET & TUBE

O. C. DURYEA CORPORATION

FIELD BLDG., CHICAGO 3, ILL.

TRAIN CREWS MORE SAFELY WITH ADDED PROTECTION!



PROTECTED BY THE DURYEA CUSHION UNDERFRAME

The added protection afforded lading is a result of a major engineering achievement in the design of cushioning devices.

When a moving car impacts the coupler on one end of a Duryea Cushion Gear car, the coupler and follower move ¾", compressing the cushion spring by a like amount. This movement is independent of any movement of the center sill. After this movement has taken place, the follower makes contact with the cushion spring housing. This housing is essentially an integral part of the center sill. If the energy of impact is sufficient to compress the cushion spring further, the center sill and its associated parts then start to move through the underframe and it can continue to move up to its full travel of 7"—a much greater distance than with other types of cushioning devices—at which point the oversolid stops make contact with the body bolsters and prevent any further sill movement or compression of the cushion springs.

At the end of the car opposite to that at which the impact takes place, the rear draft lugs, rear follower and gag washers compress the cushion spring against the restraint furnished by cushion spring link. Regardless of the direction of movement of the sill, the cushion springs at both ends of a car become active and both are always placed in compression. The 7" movement of center sill and compression of cushion springs result in increased energy dissipation with a reduction in force imparted to car and lading. The low force, an exclusive feature of the long travel Duryea Cushion Gear, provides greater protection to the car and its contents.

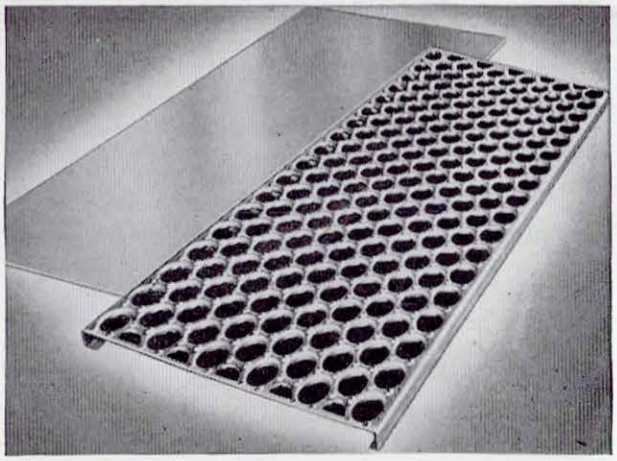
DURYEA CUSHION UNDERFRAME

THE MODERN SAFEGUARD FOR SHOCKPROOF SHIPPING

FOR FREIGHT CARS

REPLACE UNSAFE WOODEN RUNWAYS WITH MORTON "OPEN-GRIP" METAL RUNNING BOARDS

Safety-minded railroads are avoiding accident risks on running boards, where a slip or misstep by any trainman may cause a bad fall, by installing Morton "Open-Grip" metal running boards. They're thrifty in service and in *slip-insurance* . . . easy and quick to install . . . last the lifetime of the car . . . nothing to split or warp or splinter . . . no parts to work loose . . . do not collect snow or rainfall. Next time your freight cars go to the shop for repair or overhaul, begin at the top and replace unsafe running boards with grips that give the safest footing. Specify Morton "Open-Grip" runways —the modern type—when you order new freight cars. Write for full information.



IMPORTANT! One-piece Construction

No lock-joints, bolts, rivets or welds in Morton "Open-Grip" runways. They are formed from solid sheets of heavy gauge metal; installed with simple cup and bolt device, designed to avoid precision work, fitting or matching of application holes.

MORTON MANUFACTURING COMPANY

5125 WEST LAKE STREET • CHICAGO 44, ILLINOIS

DISTRICT SALES OFFICES: NEW YORK • ST. LOUIS • ST. PAUL • WASHINGTON • SAN FRANCISCO • LOUISVILLE • MONTREAL

SUPERIOR

the lighter, tighter CAR DOOR

SUPERIOR CAR DOOR CO., McCormick Bldg., CHICAGO

CF&I Track Spikes are made in accordance with A. R. E. A. Standards & Specifications.

RAILS, JOINTS, TIE PLATES, BOLTS, SPIKES, REALOCK FENCE,
WICKWIRE ROPE, CLINTON WELDED FABRIC,
WOVEN WIRE FENCE, SPARK ARRESTER CLOTH

All Quality Products of CF&I
Serving the Railroad Needs

CF&I & SUBSIDIARIES

The Colorado Fuel and Iron Corporation

GENERAL OFFICES: DENVER, COLORADO
IN THE EAST: WICKWIRE SPENCER STEEL DIVISION, PALMER, MASSACHUSETTS
ON THE PACIFIC COAST: CALIFORNIA WIRE CLOTH CORPORATION, OAKLAND 4, CALIF.

MATERIAL MOVES FASTER FROM SPOT TO SPOT...

WHEN YOUR SHOP IS YALE EQUIPPED

You not only get more output per manhour when you move by Yale power, but cost per ton of handling material is less when Yale Trucks replace muscle men.

For loading and unloading freight cars and transporting material around the yards, too, railroads have found Yale Trucks do more work, easier, faster, releasing valuable manpower for more important duties.

Find out today how Yale Trucks can cut your material handling costs. Write, phone or telegraph the nearest Yale representative, or get in touch with us direct. We'll be glad to study your handling problems and make recommendations without obligation. The Yale & Towne Mfg. Co., 4530 Tacony St., Philadelphia, 24, Pa.

RAILWAY REPRESENTATIVES:

CHICAGO 1, ILL.
The Earl E. Thulin Co.
Suite 339, Hotel Sherman

NEW YORK 17, N. Y.
Eastern Railway Supplies, Inc.
110 East 42nd St.

ST. PAUL 4, MINN.
Robert J. Wylie
2300 University Ave.

CLEVELAND 15, OHIO
C. E. Murphy
923 Midland Bldg.

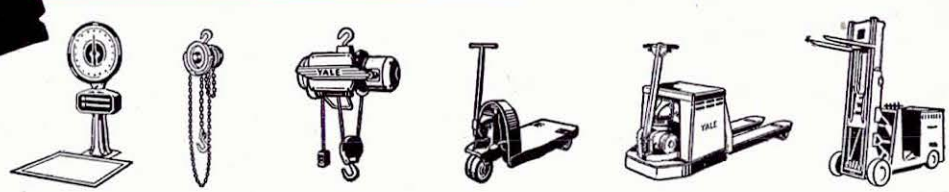
ST. LOUIS 1, MO.
Clarence Gush
Railway Exchange Bldg.

WASHINGTON 5, D. C.
Ralph W. Payne
Metropolitan Bank Bldg.

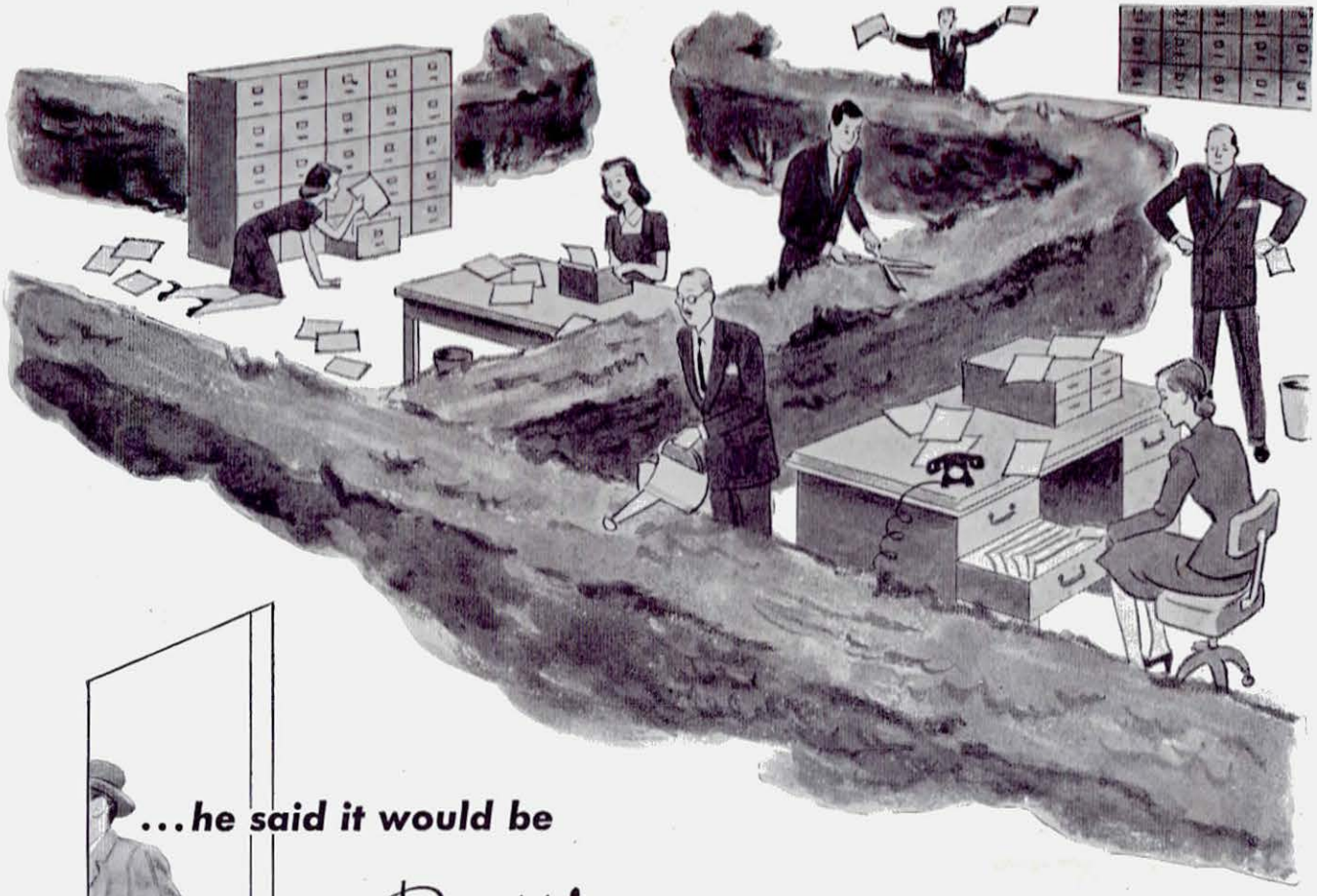
YALE

MATERIAL HANDLING MACHINERY

CUTS HANDLING COSTS . . . SAVES TIME . . . SAVES EFFORT . . . PROMOTES SAFETY



INDUSTRIAL SCALES • HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC



...he said it would be

Prettier with hedges...

...and that's when we really woke up!

The round-about course records take in traveling through some organizations is almost like an old-fashioned maze.

Crazy as it seems, planting hedges for the maze would at least show up the difficulties.

But it's much simpler to call in a Diebold man and have him make a survey of your record system at no cost to you.

He won't actually recommend hedges! But he *will* give you a complete, *unbiased* recommendation for streamlining, simplifying and speeding up your record handling. He *can* be unbiased, because Diebold makes *all four* types of record equipment. He is a specialist in properly fitting equipment facilities to job requirements. Take advantage of this Diebold service.

Look up Diebold in your phone book, or write—
Diebold, Inc., 1597 Fifth Street, S.W., Canton 2, Ohio.

Multi-Flex Rack with Flex-Site Visible Binders enables clerks to operate as many as six large size binders with the ease of one . . . permits form additions and changes without removing binders . . . provides faster random posting and reference . . . accommodates work distribution during peak period . . . holds upwards of 10,000 visible records in certain form sizes.

ROTARY VERTICAL VISIBLE MICROFILM

Diebold *Systems*

RECORD-HANDLING

MICROFILM • ROTARY, VERTICAL AND VISIBLE FILING EQUIPMENT • SAFES, CHESTS AND VAULT DOORS • BANK VAULT EQUIPMENT • BURGLAR ALARMS

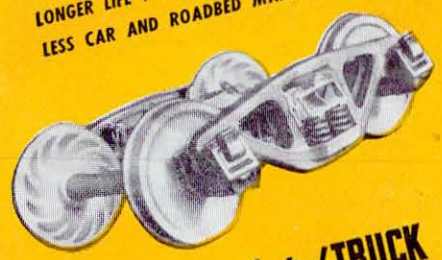
50%

A.S.F. Ride Control Trucks were specified for 50% of all the new freight cars ordered during 1946 by American railroads and private car owners for use in the United States.

The number of car sets of Ride-Control Trucks bought in 1946 was nearly three times that of 1945 . . . nearly six times that of 1944 . . . over eleven times that of 1943, the year these modern trucks were introduced.

If there could be a finer testimonial to the smooth-riding Ride-Control Truck, it is this: Car-set purchases during the first three months of 1947 amounted to more than half of the entire 1946 total.

- AN EASIER RIDE FOR LADING . . . . .
- LONGER LIFE FOR ROLLING STOCK . . . .
- LESS CAR AND ROADBED MAINTENANCE



A-S-F *Ride-Control* TRUCK

NO SPRING PLATES • NO SPRING PLANKS

LONG SPRING TRAVEL • CONSTANT FRICTION CONTROL

AMERICAN STEEL FOUNDRIES

MINT-MARK OF ○ FINE CAST STEEL

1947

You may recall this page. It appeared in the 1947 Freight Progress Annual.

. . . *And now!*

- Since last year's Freight Progress Annual, the number of Ride-Control Trucks in service or on order has increased 82%, bringing the total to

118,327 CAR SETS

SMOOTH-ROLLING, SMOOTH-RIDING RIDE-CONTROL TRUCKS PROTECT ROADBED, CAR, AND CONTENTS

The Laurentian — Southbound North of Waterford

Congratulations

on your

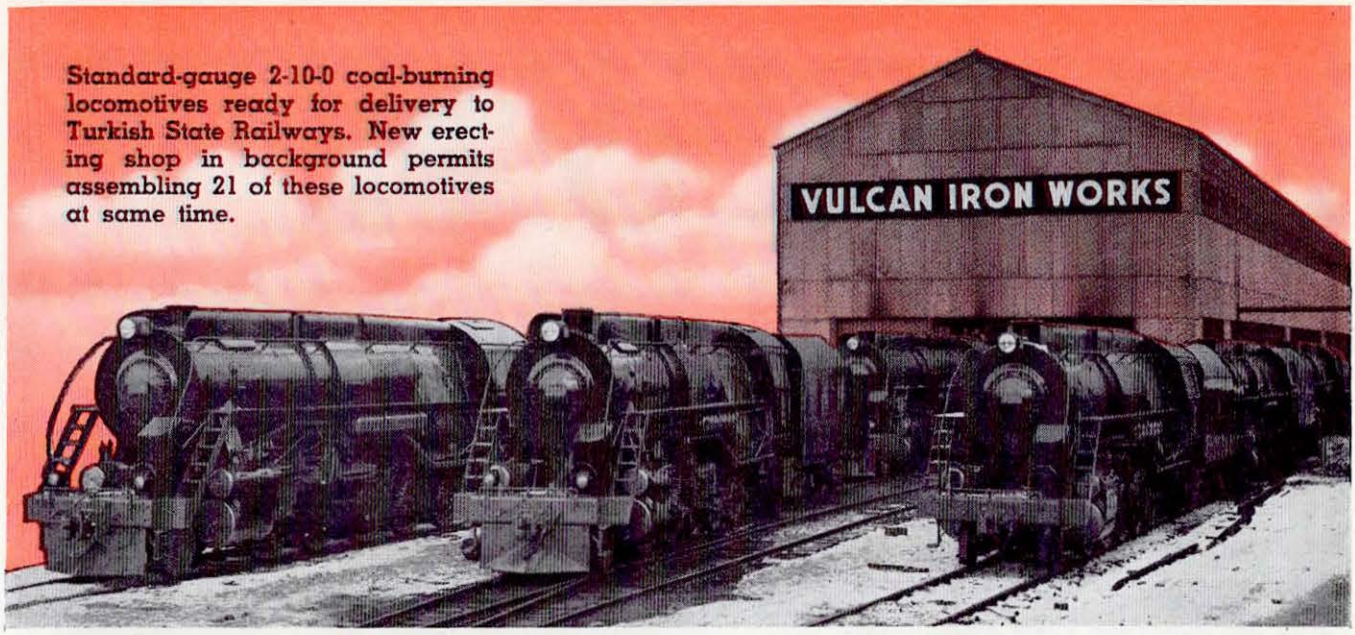
125 Years of Service

to the Travelers and to the

Shippers of America

THE RAIL JOINT COMPANY Inc.

50 CHURCH ST. NEW YORK 7, N. Y.

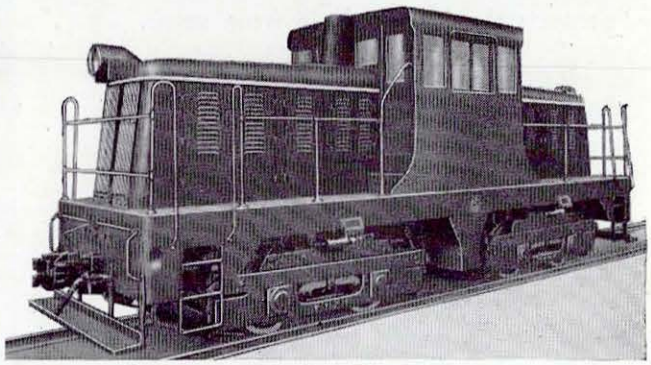


Standard-gauge 2-10-0 coal-burning locomotives ready for delivery to Turkish State Railways. New erecting shop in background permits assembling 21 of these locomotives at same time.

INCREASED CAPACITY
FOR BUILDING MODERN LOCOMOTIVES

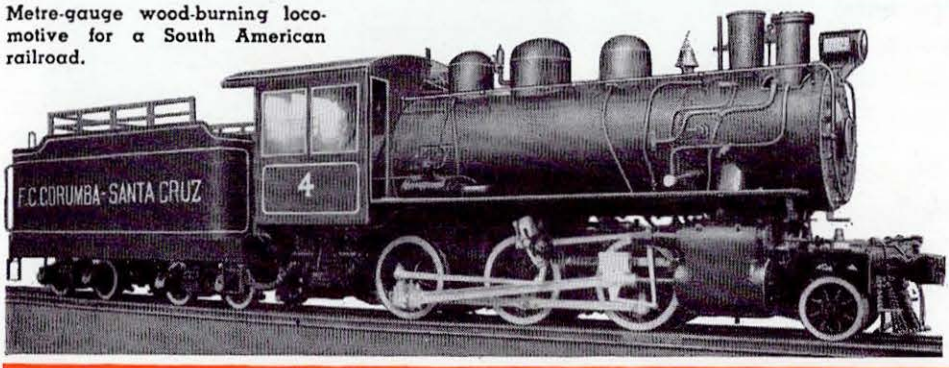
A large new erecting shop, extensive additions to other manufacturing facilities and a greatly strengthened engineering staff, now enable Vulcan to build more and better locomotives than ever before. Production on current orders is moving ahead so rapidly that we're ready—right now—to figure on more.

Write us regarding any requirement for modern locomotives up to approximately 250 tons in weight. Our engineers are prepared to cooperate in the solution of any motive-power problem in any country.



70-ton standard-gauge, 400 hp. Diesel-Electric Locomotive for large steel company. Equipped with dual control for operation with equal convenience from either side of cab.

Metre-gauge wood-burning locomotive for a South American railroad.



Inquiries are invited, also, for steel Driving and Truck Wheels, Steel Journal Boxes, Connecting Rods, Valve-Gear Details, Crossheads, Cylinder Heads, Truck Frames, Axles, Boilers and all other locomotive parts.

VULCAN IRON WORKS

Regional Offices: New York, Chicago, Washington, D. C.

WILKES-BARRE, PA., U. S. A.

Sales Agents In All Principal Cities and Countries

EQUIPCO

CERTIFIED VERTICAL WHEEL TYPE HAND BRAKE

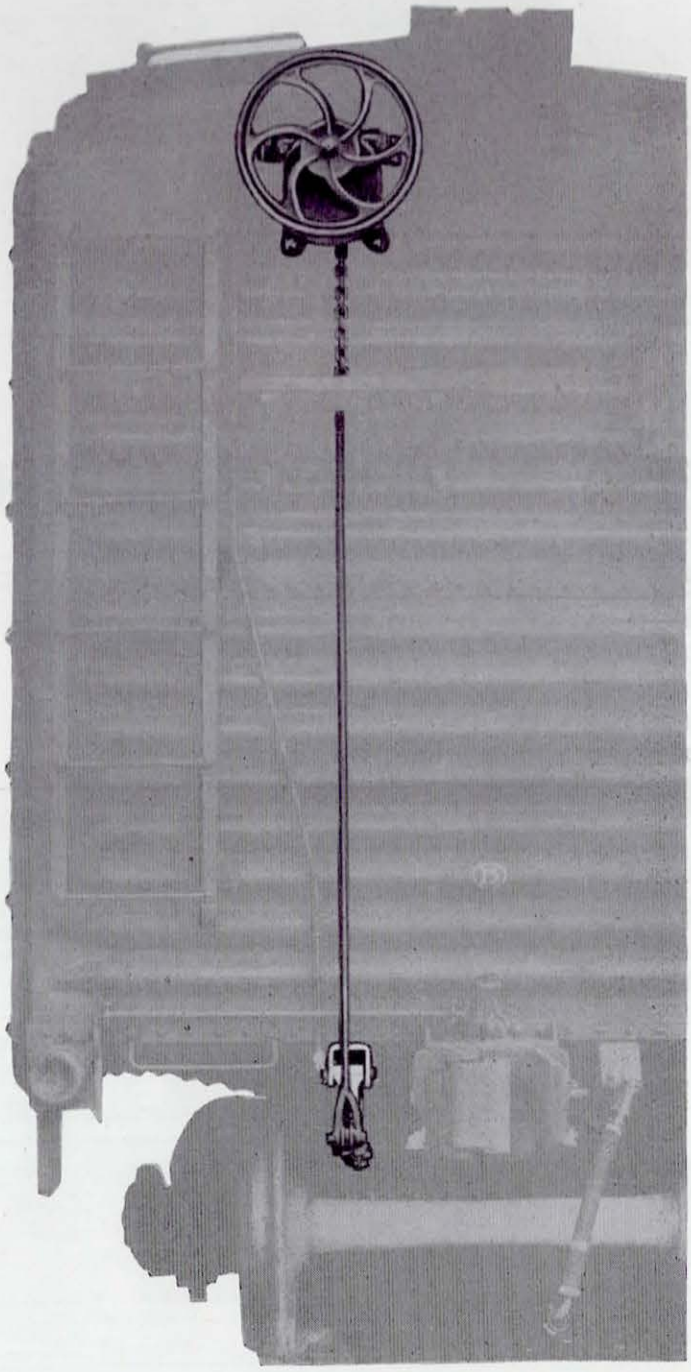
The EQUIPCO A.A.R. Certified Vertical Wheel Type Hand Brake is in extensive use on a large number of railroads. It provides fast, safe, accurate braking, and it is adaptable for use under all operating conditions.

This brake has the latest type lubrication features, providing ready means for lubrication without disturbing the power unit or dismantling it in any way. It also has the EQUIPCO improved helical winding drum, which protects the brake chain from wear.

For a fast, efficient operation, the sturdy Vertical Wheel Type Hand Brake has proved its value on railroad cars throughout the country. Operators have found it easy to install and operate—essential equipment for the swift, efficient handling of heavy traffic.

The Vertical Wheel Type Hand Brake meets all specification requirements and has been certified by the A.A.R. (Cert. No. 10).

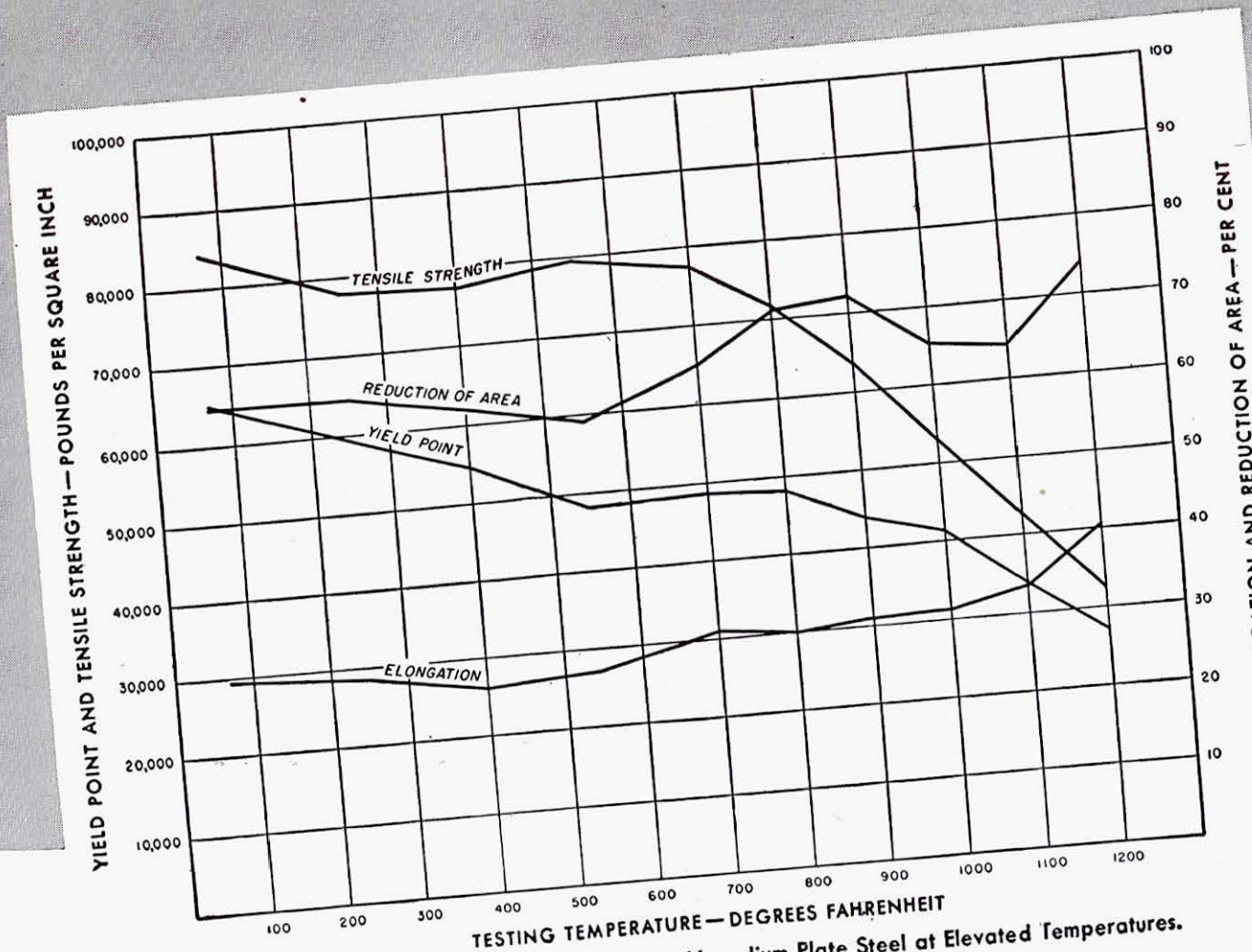
The Equipment Specialties Division also manufactures Pump-Handle Type Hand Brakes for Drop-End Gondola Cars and Drop-Type Hand Brakes for Flat Cars.



EQUIPMENT SPECIALTIES DIVISION

of Union Asbestos and Rubber Company

332 South Michigan Ave. Chicago 4, Illinios



Short Time Tensile Properties of Manganese-Vanadium Plate Steel at Elevated Temperatures.

(Average of 9 Heats)

High temperature properties of Manganese-Vanadium Steel Plate

IN PLATE STEEL for boiler construction, ability to maintain ductility throughout the temperature range customarily experienced in high pressure boilers is a notable achievement.

The above chart indicates that Manganese-Vanadium plate steel meets this requirement to a superlative degree. Representing closely-agreeing results obtained on 9 commercial heats of this type of steel, made to ASTM Spec. A 225-46, it displays in striking manner the excellent ductility in that temperature range ordinarily referred to as "blue brittle."

The hazardous embrittlement which occurs when firebox plate of ordinary steels is heated through this temperature range is of great concern to both designing engineers and operators of locomotive boilers. The satisfactory service record of Manganese-Vanadium steel plate in a number of locomotive boiler applications, under a wide variety of operating conditions, is a practical demonstration that its mechanical properties are adequate for successful locomotive boiler operation at elevated temperatures.

Our metallurgical engineers have had considerable experience in this field, and will be glad to help you obtain the maximum benefit from the use of Manganese-Vanadium steel.

MAKERS OF FERRO ALLOYS — VANCORAM BRAND — CHEMICALS AND METALS

VANADIUM CORPORATION OF AMERICA

420 LEXINGTON AVENUE, NEW YORK 17, N.Y. • DETROIT • CHICAGO • CLEVELAND • PITTSBURGH

WHAT — MAKE MONEY BY JUNKING OUR STEAM SWITCH ENGINES?

Yes sir — for every hour they are in service they are costing more than twice as much to operate and maintain as Whitcomb Diesel electric locomotives would cost.

Here are a few case histories of the 44 ton Diesel electric switchers— the figures speak for themselves.

Case #1 Over 21,000 service hours during a period of 4 years including two 8 hour shifts 6 days a week and one 8 hour shift Sundays. This locomotive handled 70% of the railroad's general switching in a busy yard.

Case #2 16,918 service hours during 3 years—operating costs per mile (including labor and material) 3.8 cents.

Case #3 23 hours daily in yard switching service, approximately 8 gals. of fuel per hour, 22,593 hours of operation, maintenance cost 34.5 cents per hour, availability 92.19%.

Whitcomb 44 ton Diesel electric switching locomotives can be operated and maintained at less than 50% of the cost of steam locomotives of comparable tractive effort performance and weight.

WHITCOMB SWITCHING LOCOMOTIVES 44 - 47 - 65 - 70 AND 80 TONS.

BLW THE BALDWIN GROUP

THE WHITCOMB LOCOMOTIVE CO.

ROCHELLE, ILL.

Subsidiary of THE BALDWIN LOCOMOTIVE WORKS

100 of these lightweight box cars were built recently by the Delaware and Hudson Railroad. Low-alloy, high-tensile Mayari R was used for the underframes and sides.

Deadweight cut to 19½ tons Payload raised to 48½ tons

These new Delaware and Hudson box cars are built on trucks of 80,000 lbs nominal capacity (one-wear wrought-steel wheels mounted on 5 in. by 9 in. axles) for which the A.A.R. has established a rail-load limit of 136,000 lbs.

By designing the cars of low-alloy, high-tensile steel together with welded construction the Delaware and Hudson was able to achieve a deadweight of 39,000 lbs and thus increase the payload capacity to 97,000 lbs without exceeding the rail-load limit. Bethlehem's Mayari R is the steel they specified for the underframes and sides of these lightweight units.

Progressive railroads are now using Mayari R in many types of equipment where either weight-savings or high strength are important, including hopper cars, gondolas, box cars, baggage cars, passenger cars and locomotives. For further information on the properties, design possibilities and advantages of this versatile low-alloy, high-strength steel, write for Mayari R Catalog 209.

★ BETHLEHEM STEEL ★

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

Mayari R *makes it lighter... stronger... longer lasting*

HOW NEW YORK CENTRAL

Overrules a

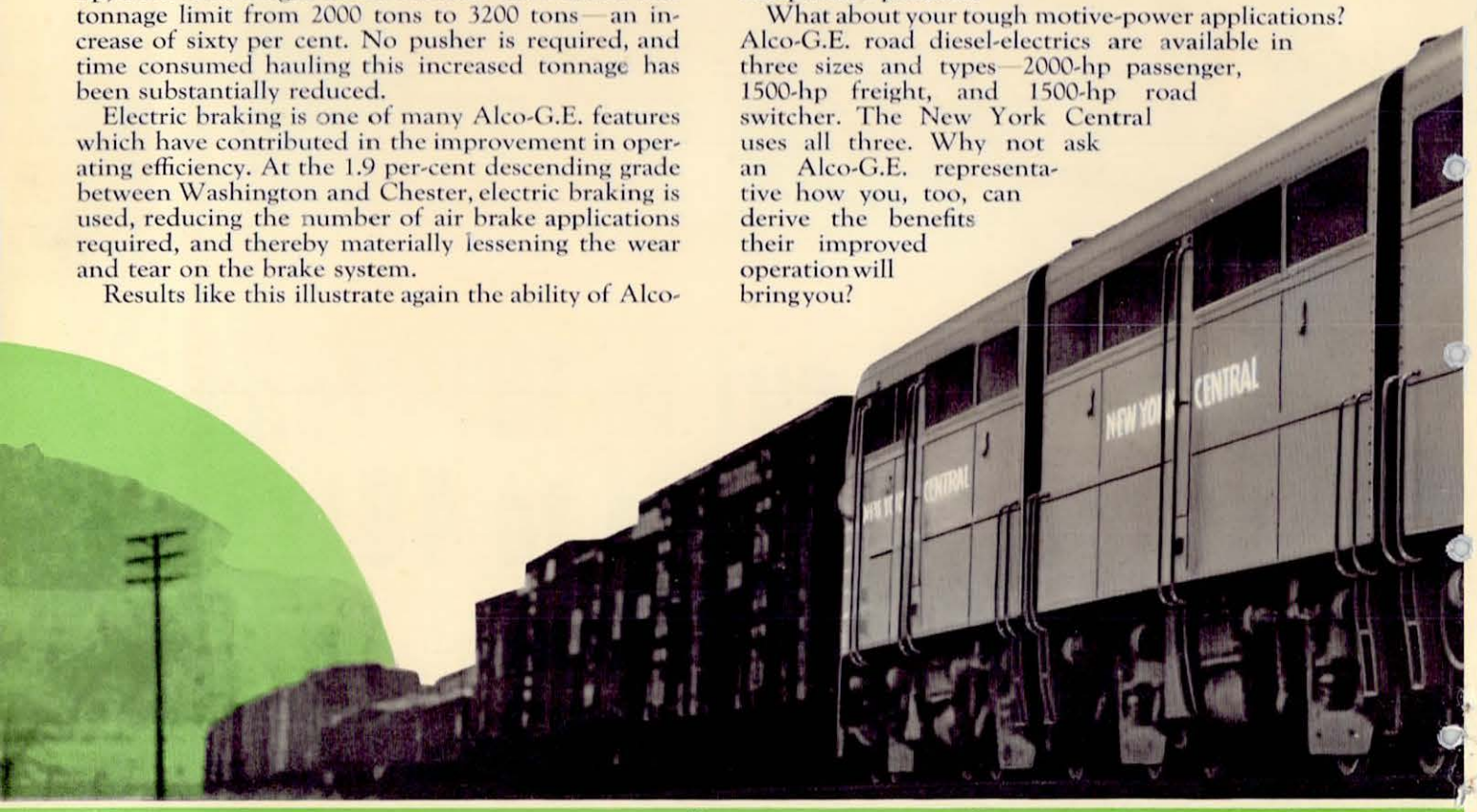
. . . On the Albany Division, Alco-G.E. diesel-electrics boost train tonnage limits sixty per cent!

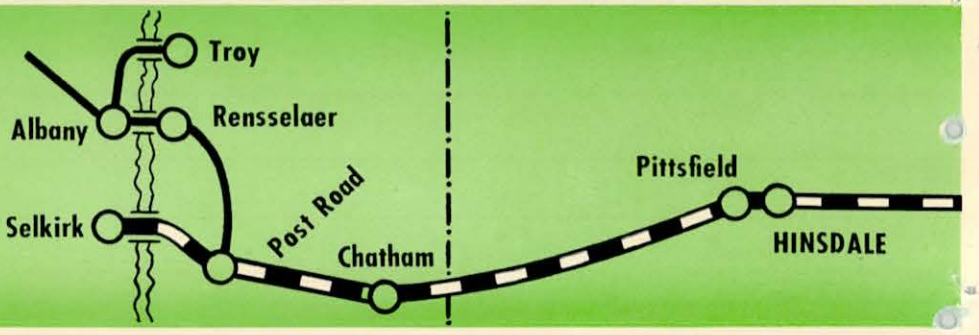
Until recently, freight trains hauled by steam power between Selkirk and West Springfield, were limited to 2000 tons, single-headed, with help required at the 1.6 per-cent Hinsdale grade. Now, three-unit, 4500-hp, Alco-G.E. freight diesel-electrics have raised this tonnage limit from 2000 tons to 3200 tons—an increase of sixty per cent. No pusher is required, and time consumed hauling this increased tonnage has been substantially reduced.

Electric braking is one of many Alco-G.E. features which have contributed in the improvement in operating efficiency. At the 1.9 per-cent descending grade between Washington and Chester, electric braking is used, reducing the number of air brake applications required, and thereby materially lessening the wear and tear on the brake system.

Results like this illustrate again the ability of Alco-G.E. locomotives to haul more ton- and passenger-miles in less time, and at lower cost. With these new locomotives, New York Central's Albany Division is speeding up service to shippers, and strengthening its competitive position.

What about your tough motive-power applications? Alco-G.E. road diesel-electrics are available in three sizes and types—2000-hp passenger, 1500-hp freight, and 1500-hp road switcher. The New York Central uses all three. Why not ask an Alco-G.E. representative how you, too, can derive the benefits their improved operation will bring you?

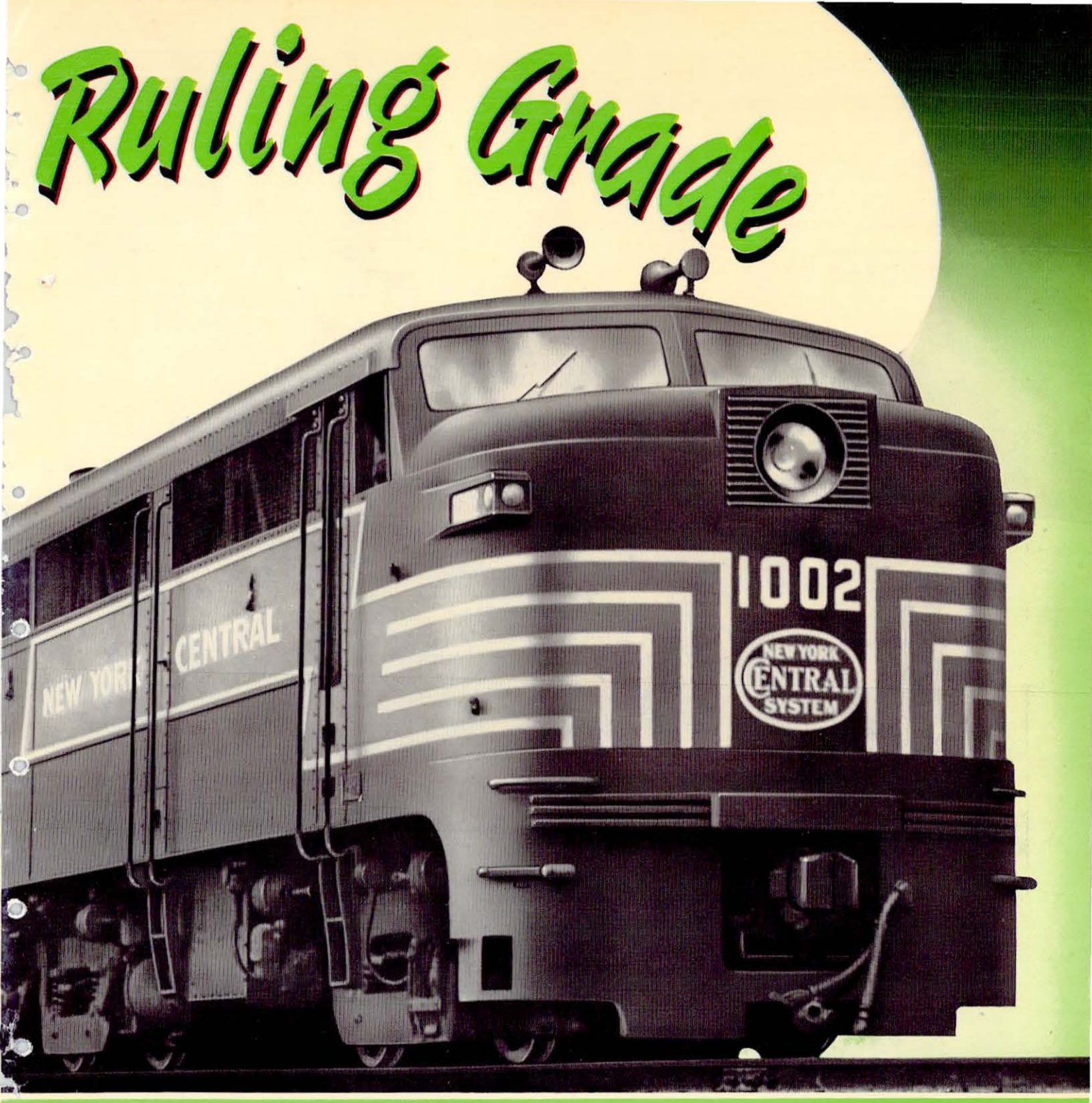




Alco GE

AMERICAN LOCOMOTIVE

Ruling Grade



Built **TO INCREASE YOUR RAILROAD'S EARNING POWER**

W. Springfield ——— To Boston

In Canada Alco GE is MLW GE

and GENERAL ELECTRIC

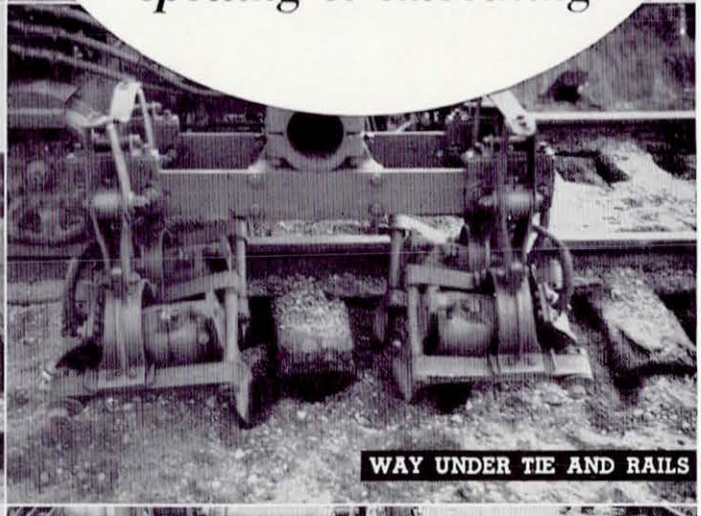
113-220

With the JACKSON MULTIPLE TAMPER

One Man
operates
12 Tampers
and puts up
Finished Track in one operation
requiring no subsequent spotting or smoothing!

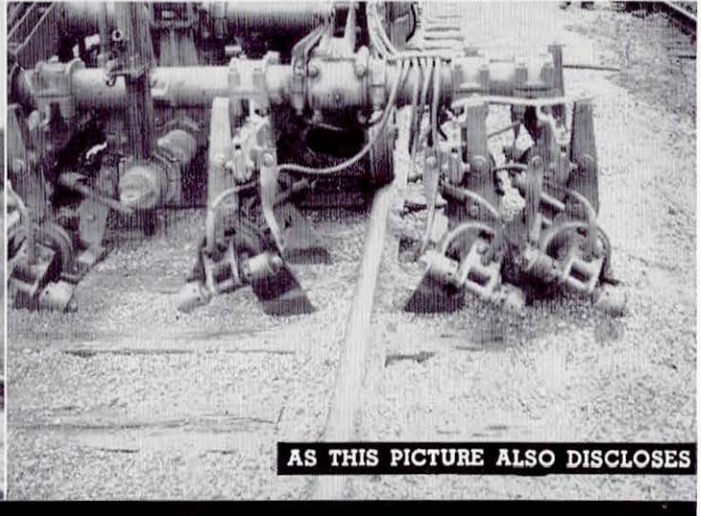
ADVANCING (the second man is just there for the ride)

POISED FOR ACTION



WAY UNDER TIE AND RAILS

DOWN THEY GO



AS THIS PICTURE ALSO DISCLOSES

In new or old work, moderate to high lifts, and in any type of ballast, the JACKSON MULTIPLE TAMPER will put up the best track that can be produced at unprecedented savings. For major ballast placing operations this equipment is truly beyond comparison. Thoroughly service-proven, each machine is guaranteed to perform as claimed. Get the complete facts, at once! Prompt action is necessary to secure '48 delivery.

ELECTRIC TAMPER & EQUIPMENT CO., LUDINGTON, MICH.

Going Up!

Freight car deliveries climbed to higher levels during the past year, despite all setbacks. The increases were accomplished through voluntary cooperation between the railroads, the steel industry, and the car-builders, with the assistance of the Office of Defense Transportation. Facing a national problem, competitive industry tackled it by traditionally American methods. The result was *progress.*

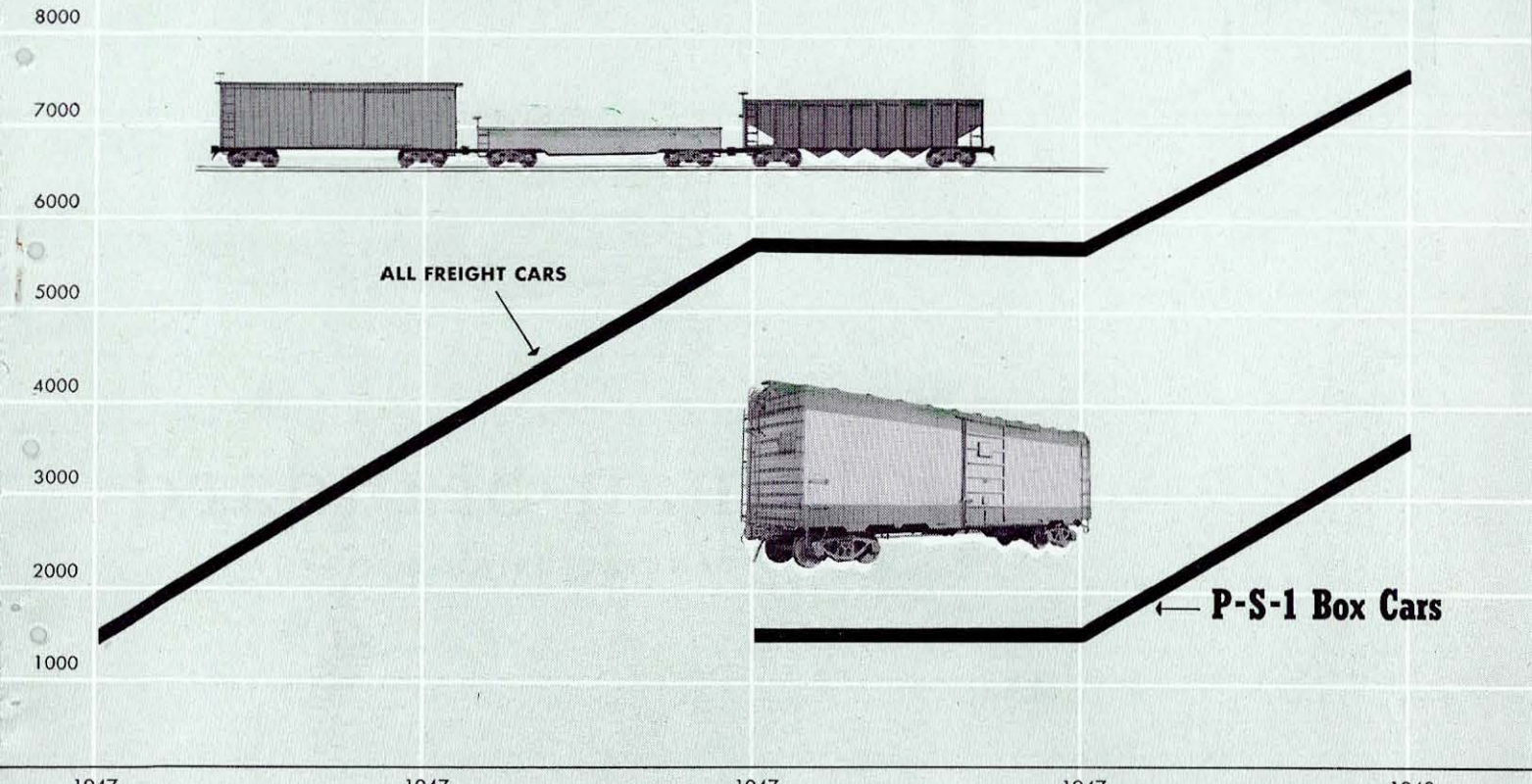
The graph sets forth the volume of Pullman-Standard freight car deliveries to the nation's railroads since January 1, 1947. It also shows the rapid acceptance by the railroads of the *standardized P-S-1 box car.* Today, half of Pullman-Standard's freight car facilities are devoted exclusively to the production of P-S-1 cars.

The need for new freight cars is still urgent. Our production estimates for 1948 contemplate a sizable gain over 1947 . . . and continued leadership in quality car-building.

Pullman-Standard

CAR MANUFACTURING COMPANY

PULLMAN-STANDARD DOMESTIC FREIGHT CAR DELIVERIES



Progress by P·S·1

The P-S-1 box car is an answer to the *need for greater standardization* in car-building.

Many months before the first P-S-1 was unveiled in Atlantic City last June, Pullman-Standard engineers were building this car on paper.

New methods were evolved, new tools designed, new ways found to utilize tested Pullman-built components, *with mass-production efficiency,* in the *first* standardized box car to win the approval of America's railroads.

P-S-1 *number* one rolled off the production line on June 25, 1947—part of a lot of 500 ordered by Lehigh Valley in October, 1946. Just a starter!

By April, 1948, more than 7,000 P-S-1 cars had been *delivered*—to *nine* railroads.

On May 1, 1948, nearly 10,000 *more* P-S-1 cars were *on order*—for *ten* railroads.

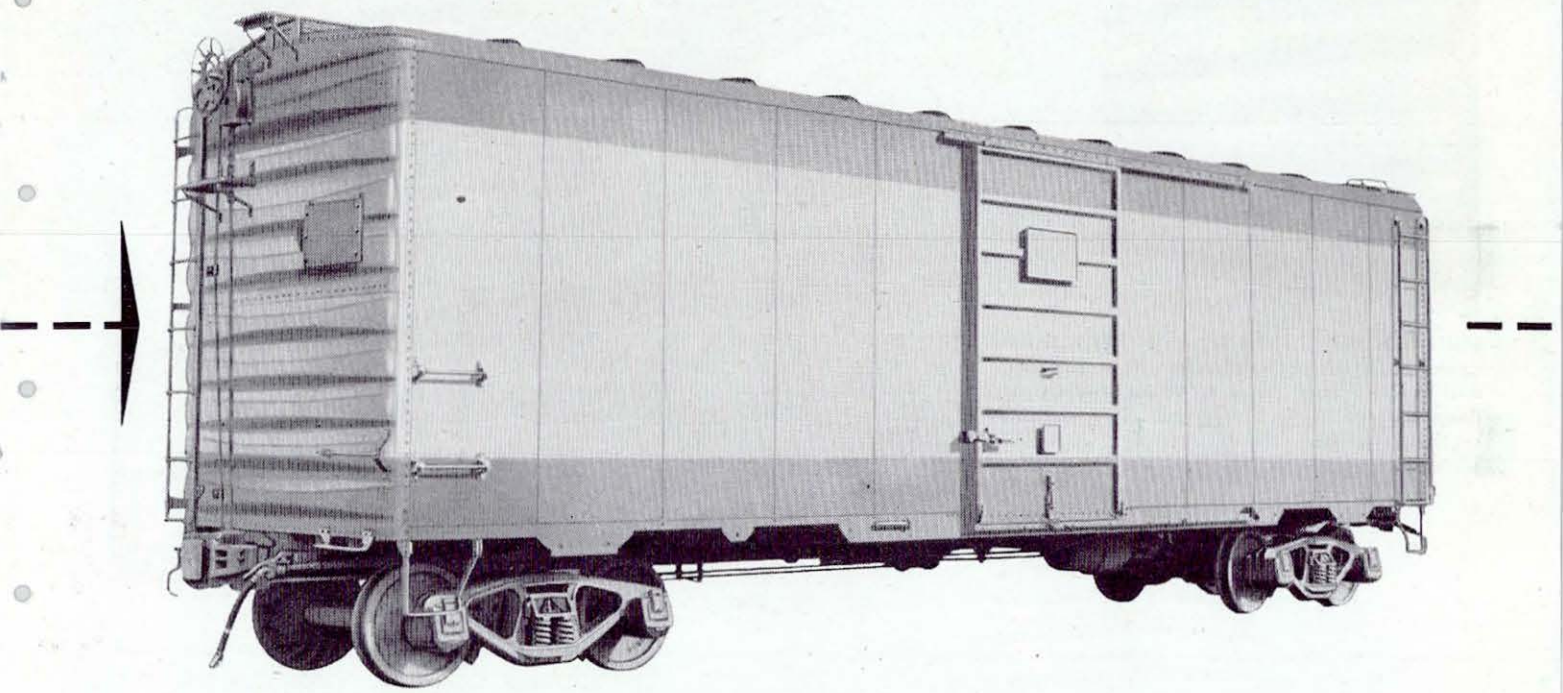
And that spells "progress"—firmly founded on quality and value.

Pullman-Standard

CAR MANUFACTURING COMPANY

Since the introduction of the P-S-1, nearly 40% of all box cars ordered from all contract car-builders, and over 28% of ALL box cars ordered from ALL sources, have been P-S-1 cars.*

**Percentages based upon car-order figures reported by American Railway Car Institute.*

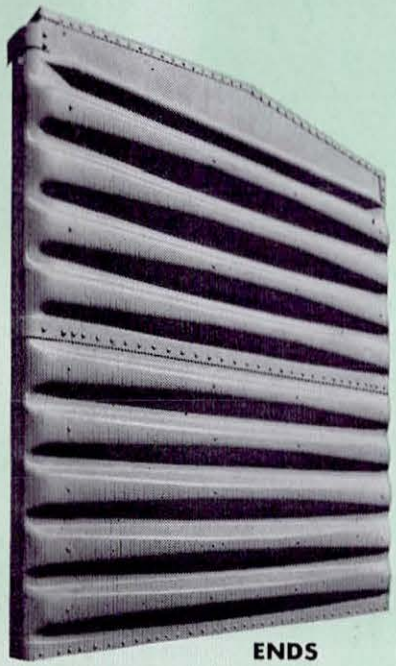


P-S-1 offers the railroads a *quality product at tangible savings.*

That is why Pullman-Standard is making a definite contribution to *freight progress.*

Strength Durability

THE P-S-1 BOX CAR is built of components mainly engineered and manufactured by Pullman-Standard. Fabricated as a unit, the car is a sturdy and durable structure.

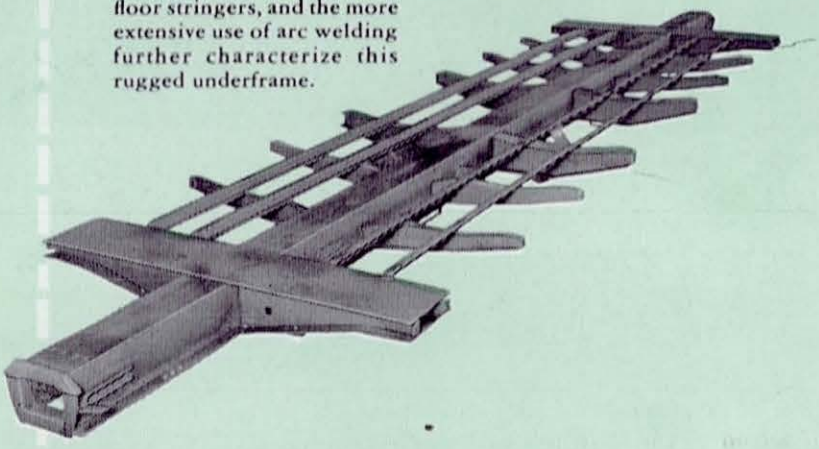


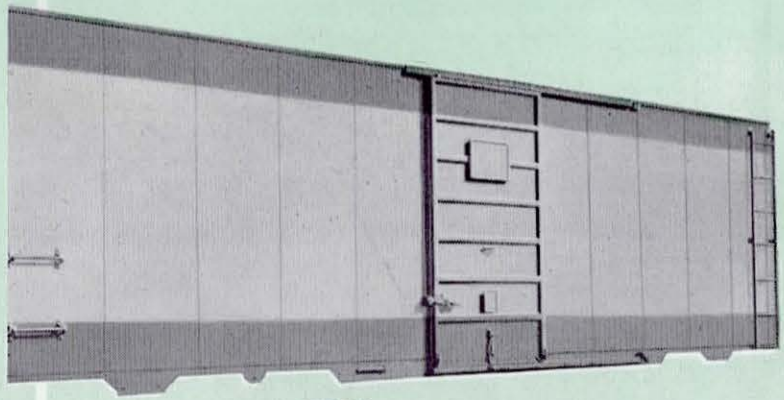
ENDS

Pullman design, in two sections riveted at the center seam; riveted to the end sill, to the roof and to the corner posts. Corrugations are 4" deep, spaced on 12" centers. The bottom section is ¼" steel, the top section $\frac{3}{16}$".

UNDERFRAME

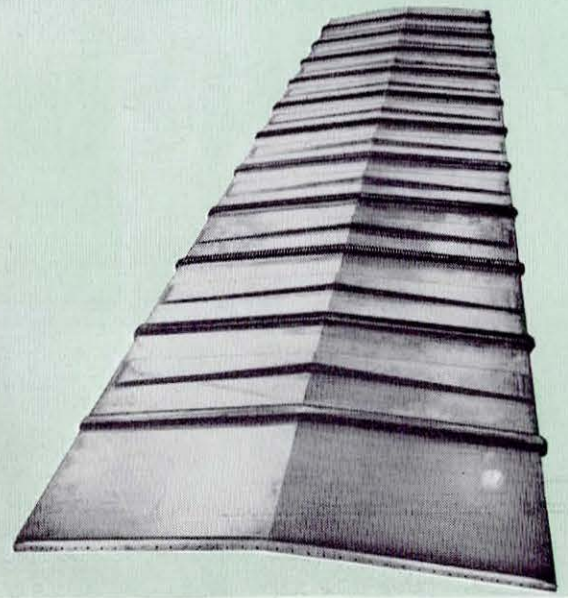
Since first developed and introduced in 1934, nearly 100,000 underframes using the welded draft-sill construction have been built by Pullman. A built-up welded bolster, continuous floor stringers, and the more extensive use of arc welding further characterize this rugged underframe.





SIDES

Pullman automatic-arc-welded type. Side sheets are continuously welded to the flange of Z-bar side posts. Sheets are placed on the outside of the side plate and the side sill, and are continuously arc welded thereto. Fabricated in special automatic jig.



ROOF

The copper-bearing galvanized roof sheets are flanged and joined together by riveting within a hairpin type of seam cap. The sheets flange down and rivet to the upstanding vertical leg of the side plate Z-bar and to the face of the steel end.

Pullman-Standard

CAR MANUFACTURING COMPANY

CHICAGO • NEW YORK
CLEVELAND • WASHINGTON, D.C.
PITTSBURGH • BIRMINGHAM
WORCESTER, MASS.

SAN FRANCISCO SALES REPRESENTATIVE, MARK NOBLE

KYSOR..

Occupies a Page in Railroad History!

HAVING completed a quarter of a century of service, we feel an integral part of the railroad industry, especially since we have kept apace with its progress.

Our field is railroad equipment and we have long ago accepted *the responsibility of leadership* in our lines: cab heaters, defroster equipment to keep windshields clear, and shutters to maintain temperatures in Diesel locomotives, allowing for better operation and economical running.

Our products are constantly being improved whenever new materials and methods make that possible, so they are as modern as the latest streamlined freight train.

In dealing with Kysor, you do business with old friends in the railroad field — *we qualify with quality!*

Write for literature or have our engineers discuss our equipment with yours.

KYSOR HEATER COMPANY
Cadillac, Michigan

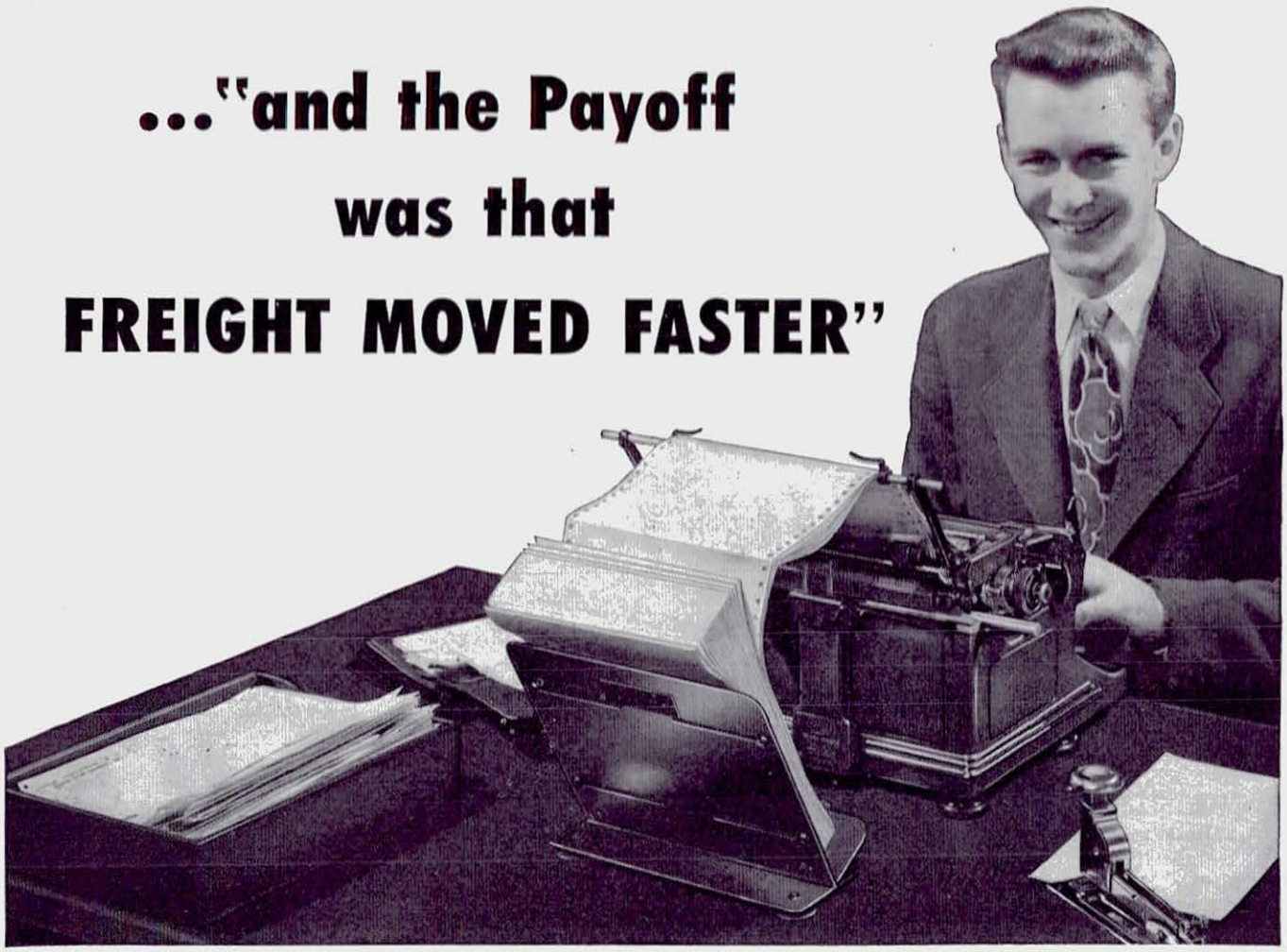
Canadian Representatives:
RAILWAY & POWER ENGINEERING CORP.
NEW GLASGOW • MONTREAL • NORANDA • NORTH BAY
TORONTO • HAMILTON • WINDSOR
WINNIPEG • VANCOUVER

MADE GOOD
TO MAKE-GOOD

CAB HEATERS
•
SHUTTERS
•
WINDSHIELD
DEFROSTERS

"Built to Last"

..."and the Payoff was that FREIGHT MOVED FASTER"



ATLANTIC COAST LINE *increases production of waybills 40% and speeds freight traffic by "Paperwork Simplification"*

In one instance alone—the production of Freight Waybills—"Paperwork Simplification," put into effect by Standard Register, brought about an astonishing speed-up for the Atlantic Coast Line Railroad Company.

It started with a little thing—a cut from 10 to 4 operations in the writing of one waybill. But that ballooned. Under the old system, each clerk was producing an average of 3500 waybills a month. No sooner was Standard Register "Paperwork Simplification" put into effect than that average jumped to 4900 waybills a month—an increase of 40%. The improved clerical efficiency would have been worth-while in itself, but in addition, faster writing and handling of waybills *has greatly facilitated the movement of freight.*

Cut Costs—Pyramid Savings!

"Paperwork Simplification," as effected by surveys employing exclusive Standard Register techniques, extends through the entire operational structure, increasing efficiencies, saving time and labor, cutting costs at many points. Three leading railroads, for instance, cut basic paperwork more than 10% by eliminating or combining original writings and subsequent posting operations in freight claims accounting. Savings pyramid with "Paperwork Simplification." They start with more efficient forms, are 10 to 50 times greater in writing and handling, and reach very high figures in greatly improved management control.

Get the Vital Facts!

A survey of your paperwork system by Standard Register specialists will show such opportunities for savings and increased operational efficiency. But first, write today on your business letterhead for a copy of "The ABC of Work Simplification In Office Operations."

Bring Your Forms Up to Standard

Standard Register

Exclusive Source of "PAPERWORK SIMPLIFICATION"

THE STANDARD REGISTER COMPANY, 1105 Campbell St., Dayton 1, Ohio

Pacific Coast: Sunset McKee-Standard Register Sales Co., Oakland 6, California. *Canada:* R. L. Crain Limited, Ottawa. *Great Britain:* W. H. Smith & Son, Ltd., London.

for new SPEED highs

"Holland-ize"*

* Equip Trucks with HOLLAND Double-Duty VOLUTE Springs

All you need to do is replace coil springs with Style C-200 *Holland* Ride-Ease VOLUTE Truck Springs. This one simple change improves riding qualities tremendously and makes your present trucks Safe for today's High Speed requirements:

1—*Long Travel Springs*

2—*Friction Control*

40-TON SPRING GROUP
HOLLAND *Ride-Ease* VOLUTE TRUCK SPRINGS
STYLE C-200

- *Softness of the 2 3/4" Travel Holland Volute is equal to the 3 1/16" Travel Helical Spring.*
- *Each Spring a Soft, Long-Travel, Vertically and Laterally Stable, Self-Controlled, Load-Carrying Spring.*

2648

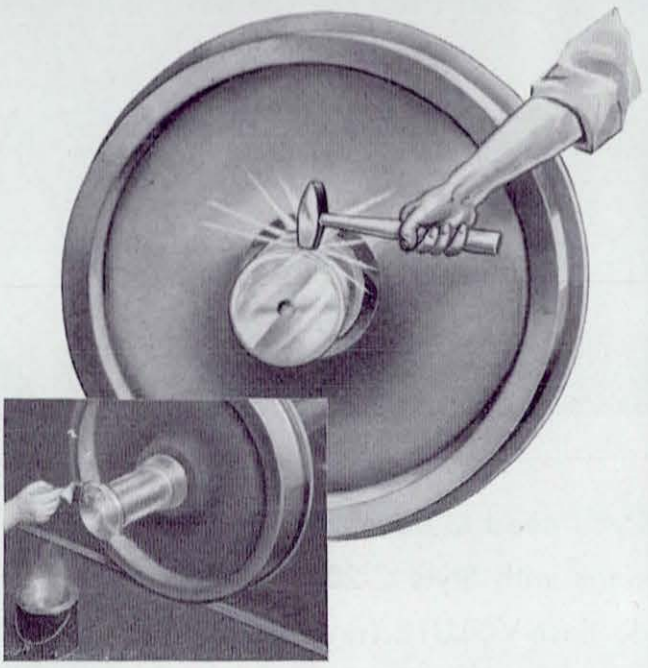
HOLLAND COMPANY
332 S. MICHIGAN AVE.
CHICAGO 4, ILLINOIS

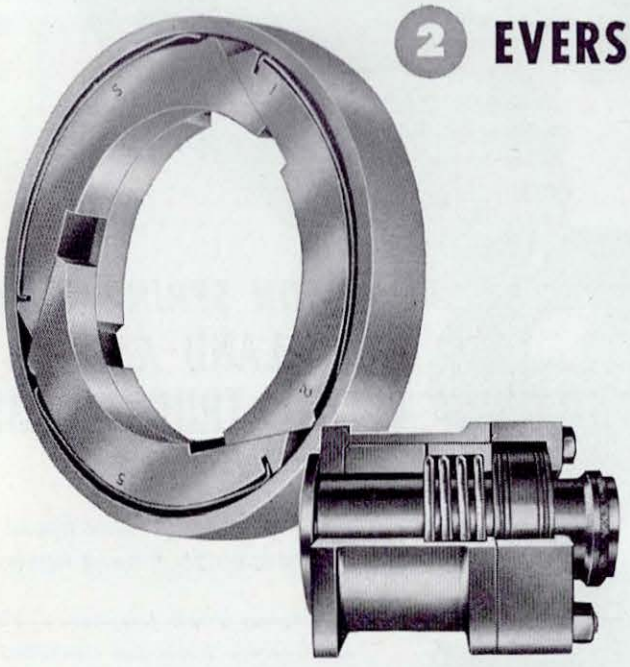
Introducing Two New Products from

SPRING PACKING CORPORATION

1 PLASTIC ARMOR

A specially prepared plastic coating that forms a skin-tight hermetic seal around delicate metallic surfaces and prevents rust. Ideal for protecting newly machined car journals, fuel injectors, valve seats, cylinder liners, feed lines, machine tools, instruments, etc., from moisture, dust and breakage. Saves both on time and materials when compared with paint or grease. Easy to apply by brushing, spraying or dipping. Economical because reclaimable.





2 EVERSEAL METALLIC PACKING

An exclusive, patented, metallic packing for locomotive piston rods, valve stems and small piston rods. Proved superior by actual use on major railroads! Cuts maintenance costs because it lasts longer and is easier on rods . . . due to uniform wear and very light pressure required to make a tight seal. On locomotives, "Clears the View for Greater Safety". Interchangeable to a large extent with other packing . . . no expensive "extras".

Complete information on request. Write to:

SPRING PACKING CORPORATION

122 SOUTH MICHIGAN AVENUE CHICAGO 3, ILLINOIS

Worn liners made *BETTER THAN NEW!*

Reclaimed with PORUS-KROME*

Don't scrap or oversize worn Diesel locomotive cylinder liners—they can be made *better than new* with PORUS-KROME! Except for loss of perhaps .4% of its weight, a worn liner has the same good metal; the same precision machining as when new. It is valuable property, well worth reclamation!

With the Van der Horst PORUS-KROME process, worn liners are brought back to standard size. You eliminate stores expense and maintenance headaches which multiply with the use of oversize liners, pistons and rings.

Compared with unprocessed liners, the superior wear-resistance of PORUS-KROME *increases service life of the bore by 400%, or more.* Piston rings will wear much longer. Scuffing, seizing and scoring will be virtually eliminated.

Fewer liner, piston and ring replacements mean reduced maintenance costs. Your Diesel-electric locomotives will spend still less time in the shop, *still more on the rails!*

Reclaiming worn liners with PORUS-KROME is a practical plan now being proved by more and more maintenance departments. Reclamation with PORUS-KROME costs no more than buying untreated replacement liners, but *savings* are multiplied many times.

Before you oversize another liner—write for full information about PORUS-KROME! And—for new Diesel locomotives—ask for the names of leading builders who incorporate PORUS-KROME as standard equipment.

*PORUS-KROME is dense, hard, wear and corrosion-resistant chromium applied by the exclusive Van der Horst process which gives working surfaces an infinite number of tiny reservoirs for perfected lubrication.

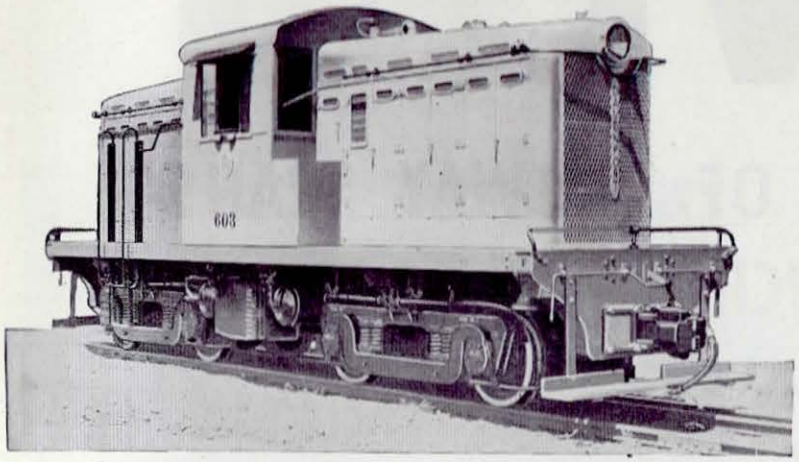
VAN DER HORST CORPORATION OF AMERICA • OLEAN, N. Y.

PORUS - KROME

Good for the Life of your Engines

VAN DER HORST TRADE MARK

FOR TOP PERFORMANCE ON *Your* RAILS • •



Leste Braziliere, the government railroad of our southern neighbor, employs eight of these 44-ton Davenport Diesel-Electrics which, incidentally, have established new freight handiing records.

specify

DAVENPORT

Better-Built

LOCOMOTIVES

available in

STEAM • GASOLINE • DIESEL

with

ELECTRIC or MECHANICAL DRIVE

YOUR INVESTMENT IS QUICKLY RETURNED THROUGH THESE ADVANTAGES

LOWER FUEL COSTS

•

CHEAPER MAINTENANCE

•

FEWER MAN HOURS

•

100% AVAILABILITY

•

NO ASH PITS OR WATER FACILITIES

•

NO WASTE THROUGH OVER-POWER

•

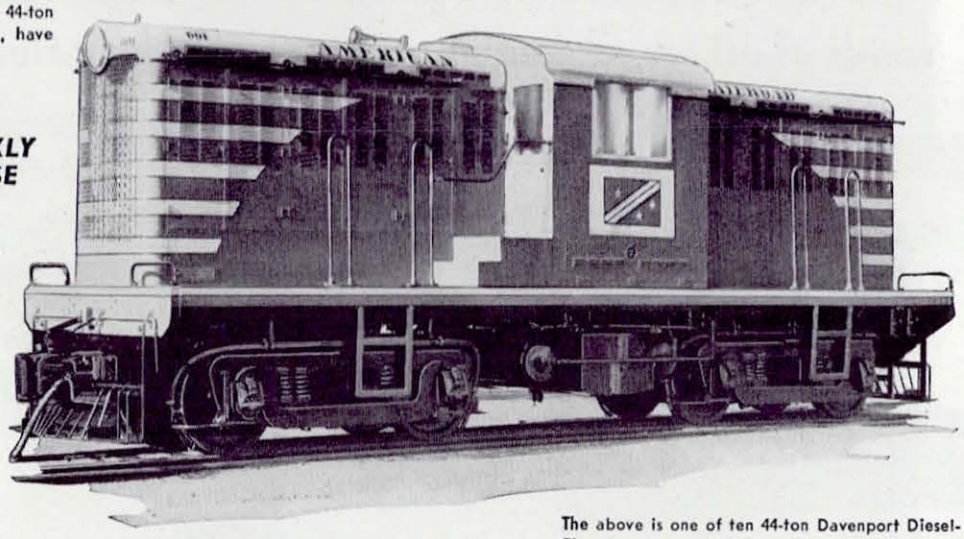
NO ROUNDHOUSE

•

SMOKE-FREE AND QUIET

•

SAFER FOR MEN, LADING AND ROLLING STOCK



The above is one of ten 44-ton Davenport Diesel-Electrics recently delivered to the American Railroad of Porto Rico — a symbol of progress for this fruitful island.

The superb, modern power units which bear the name DAVENPORT have behind them almost 50 years of quality tradition. Thousands have gone into the service of railroads and major industries on every continent. They have won high respect for their consistent record of trouble-free operation at lowest ton mile costs — and their dependability through many years of hard usage.

Get acquainted with Davenport Better-Built Locomotives. They will plug up the leaks of over-power on many locations and will combine flexibility with economy on branch line service. They can be individualized in design to meet special applications.

Complete Information on Request

DAVENPORT LOCOMOTIVE WORKS

A DIVISION OF DAVENPORT BESLER CORPORATION

DAVENPORT, IOWA, U. S. A.

Pioneers of the Lighter Diesel Switchers

Export office • Brown & Stites Co., Incorporated, 50 Church St., New York 7 • Cable Address "Brosites"

Worn liners made *BETTER THAN NEW!*

Reclaimed with PORUS-KROME*

Don't scrap or oversize worn Diesel locomotive cylinder liners—they can be made *better than new* with PORUS-KROME! Except for loss of perhaps .4% of its weight, a worn liner has the same good metal; the same precision machining as when new. It is valuable property, well worth reclamation!

With the Van der Horst PORUS-KROME process, worn liners are brought back to standard size. You eliminate stores expense and maintenance headaches which multiply with the use of oversize liners, pistons and rings.

Compared with unprocessed liners, the superior wear-resistance of PORUS-KROME *increases service life of the bore by 400%, or more.* Piston rings will wear much longer. Scuffing, seizing and scoring will be virtually eliminated.

Fewer liner, piston and ring replacements mean reduced maintenance costs. Your Diesel-electric locomotives will spend still less time in the shop, *still more on the rails!*

Reclaiming worn liners with PORUS-KROME is a practical plan now being proved by more and more maintenance departments. Reclamation with PORUS-KROME costs no more than buying untreated replacement liners, but *savings* are multiplied many times.

Before you oversize another liner—write for full information about PORUS-KROME! And—for new Diesel locomotives—ask for the names of leading builders who incorporate PORUS-KROME as standard equipment.

*PORUS-KROME is dense, hard, wear and corrosion-resistant chromium applied by the exclusive Van der Horst process which gives working surfaces an infinite number of tiny reservoirs for perfected lubrication.

VAN DER HORST CORPORATION OF AMERICA • OLEAN, N. Y.

PORUS - KROME

Good for the Life of your Engines

VAN DER HORST TRADE MARK

an important step in freight progress...

Streamlite

HAIRINSUL INSULATION

NOW LIGHTER BY 40%...

New *Streamlite* HAIRINSUL is the modern insulation for modern refrigerator cars. It weighs 40% less . . . yet it retains all the HAIRINSUL *efficiency* . . . an efficiency which has been proven by more than a generation of exceptional service in the railroad field. *Streamlite* HAIRINSUL never rots, settles, separates or shakes down. Write today for complete information.

AMERICAN HAIR & FELT COMPANY
Dept. H-85 • Merchandise Mart • Chicago 54, Ill.

Hair Is Nature's Own Insulation...
It's nature's protective covering for animal life... it's a barrier against extreme outside temperature changes. HAIRINSUL is made of animal hair... one of the best reasons why HAIRINSUL is accepted as the finest of all insulating materials for refrigerator cars.

Streamlite Hairinsul

SETS THE STANDARD BY WHICH ALL OTHER REFRIGERATOR CAR INSULATIONS ARE JUDGED

A PROGRESSIVE STEP BY..

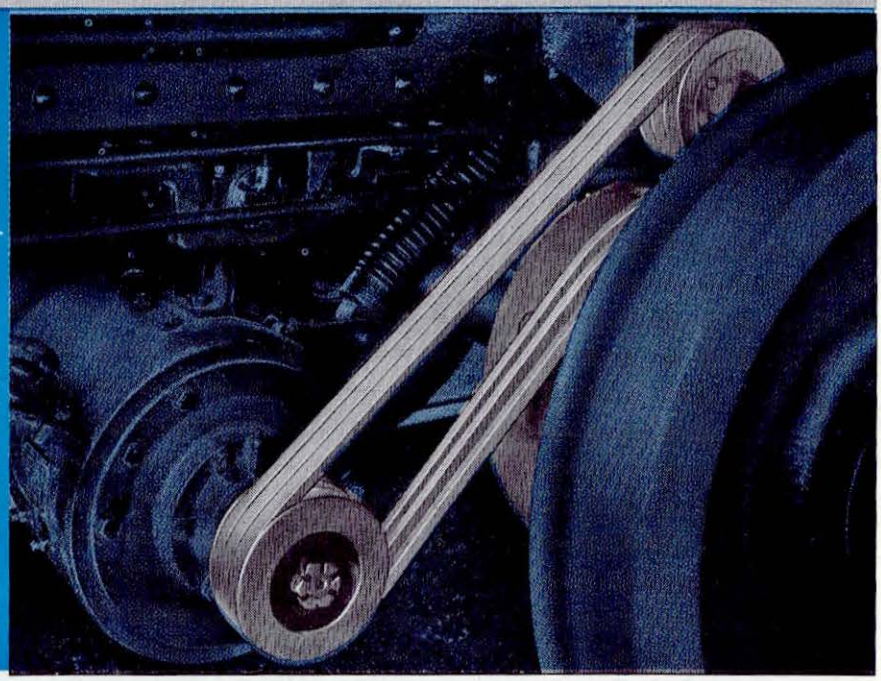
MISSOURI PACIFIC LINES

these noteworthy achievements to its credit:

★ Train radio was installed in 15 freight locomotives and cabooses as well as 7 stations along the 200-mile heavily traveled freight route between McGehee, Ark., and Alexandria, La.

Missouri Pacific
"NEWS REEL" Jan. 1, 1948

NOW! Dependable power source makes possible two-way radio communication



New Dayton V-Belt Axle Drive Engineered and Designed Specifically for Cabooses.

This new, different axle drive—equipped with Dayton Standard Thorobred Endless V-Belts—makes possible a safe, dependable source of power for two-way radio communications. Designed exclusively for cabooses in freight service, this new drive is actually suspended from the caboose body; the power transmitting V-Belts ride freely on the rubber-bushed, flat axle pulley providing a shockproof, positive drive. Easy to install, easy to maintain (idler pulleys of the roller bearing type, requiring lubrication only once a year)—this Dayton Drive assures uninterrupted communication between conductor, engineer and train dispatcher.

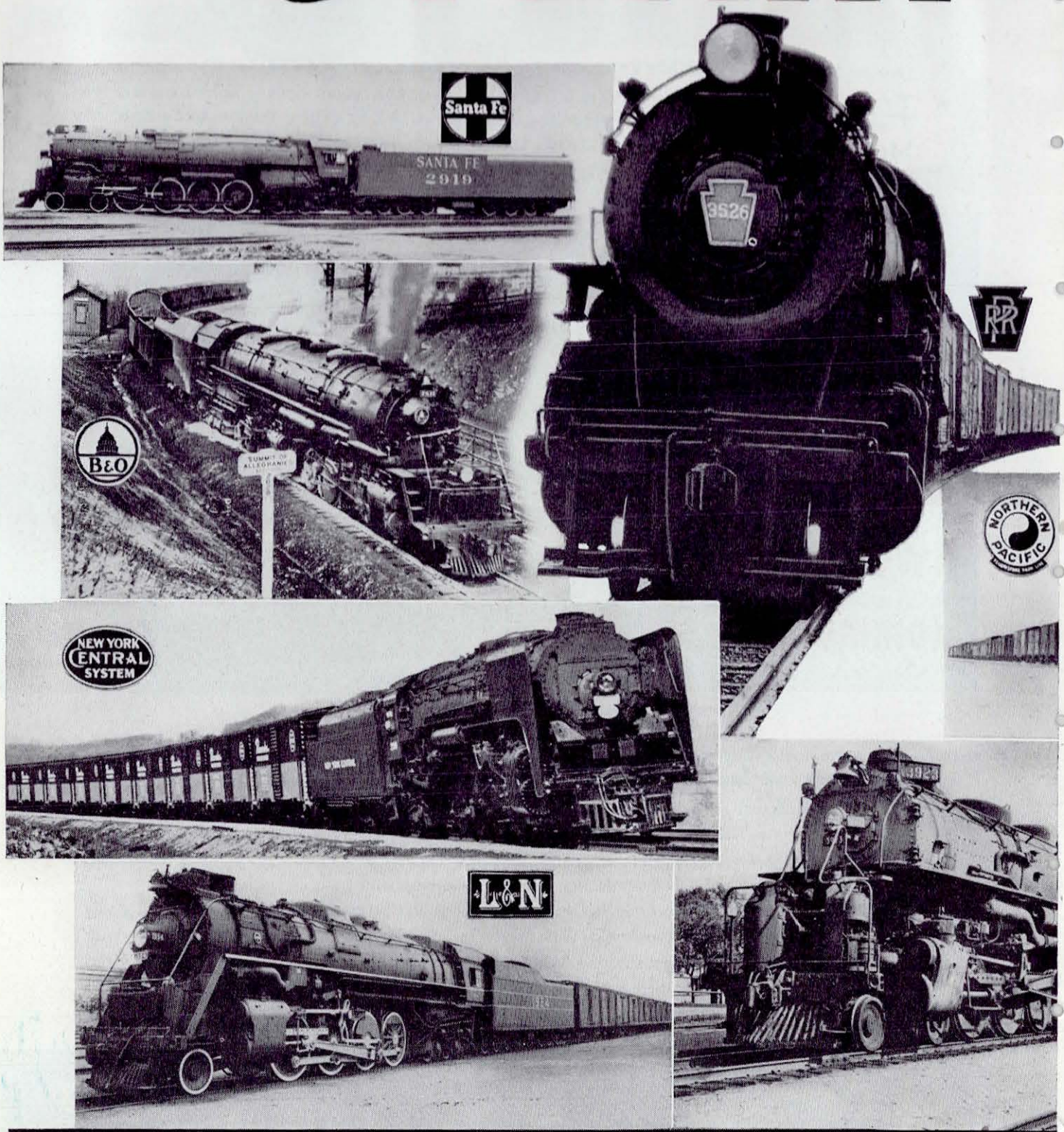
A Dayton railway V-Belt specialist will gladly work with you in adapting this drive to your cabooses. For complete information, write direct to DAYTON RUBBER, DAYTON, OHIO.

Dayton Rubber *V-Belts for Railroads*

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

CAR LIGHTING DRIVES · COMPRESSOR DRIVES · AIR CONDITIONING DRIVES · DIESEL DRIVES

STEAM

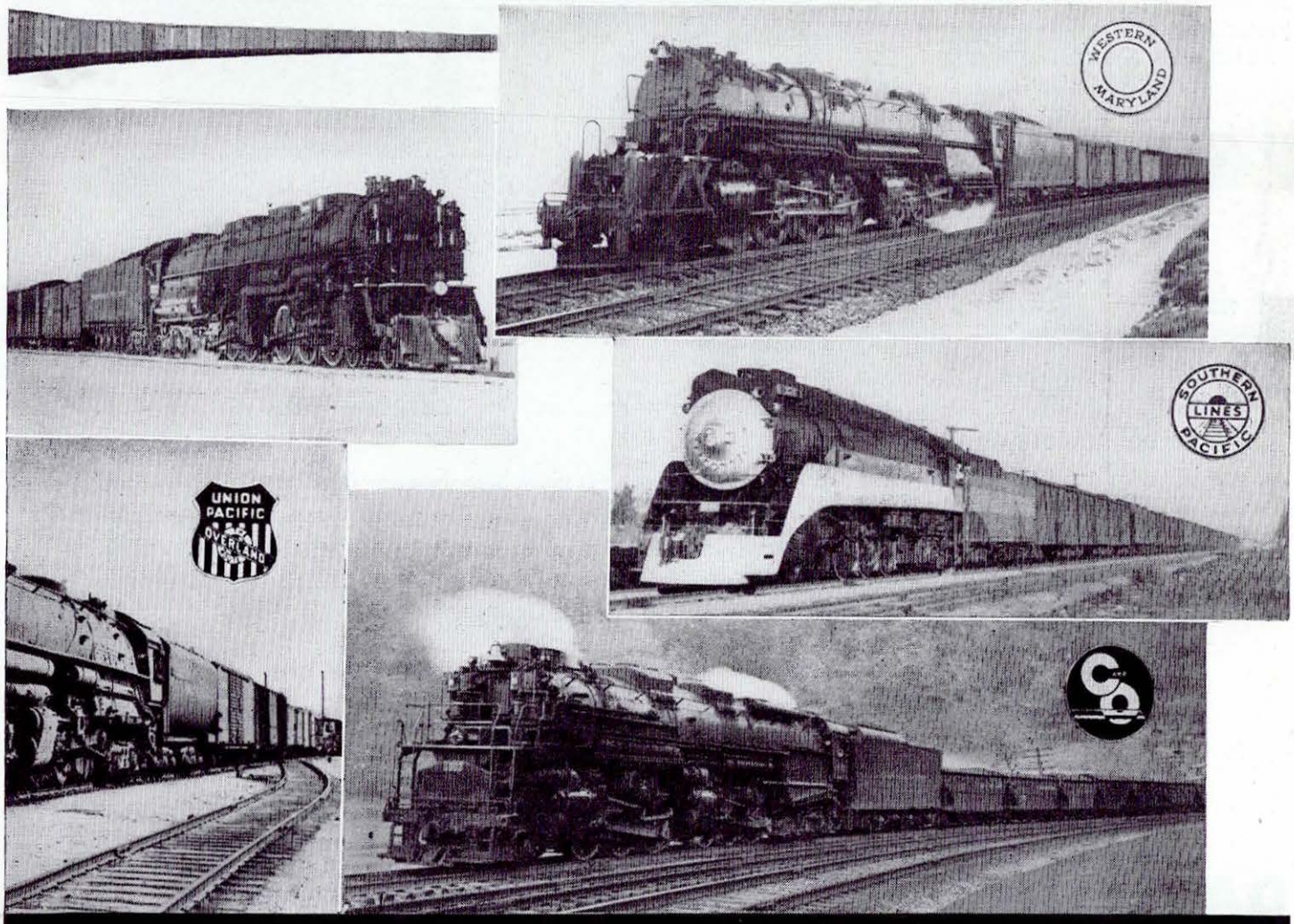


FLANNERY BOLT

POWER

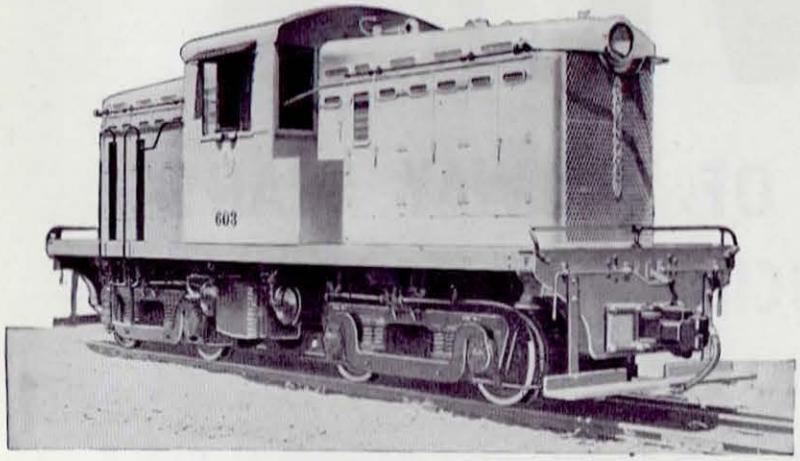
THE LIFE BLOOD OF RAILWAY TRANSPORTATION PRODUCING 90% OF FREIGHT LOCOMOTIVE MILES ANNUALLY...

All of the Locomotives shown on this page, and many thousands of others, are equipped with Flannery Flexible Staybolts



COMPANY BRIDGEVILLE PENNSYLVANIA

FOR TOP PERFORMANCE ON *Your* RAILS • •



Leste Braziliere, the government railroad of our southern neighbor, employs eight of these 44-ton Davenport Diesel-Electrics which, incidentally, have established new freight handling records.

specify

DAVENPORT
Better-Built
LOCOMOTIVES

available in

STEAM • GASOLINE • DIESEL

with

ELECTRIC or MECHANICAL DRIVE

YOUR INVESTMENT IS QUICKLY RETURNED THROUGH THESE ADVANTAGES

LOWER FUEL COSTS

•

CHEAPER MAINTENANCE

•

FEWER MAN HOURS

•

100% AVAILABILITY

•

NO ASH PITS OR WATER FACILITIES

•

NO WASTE THROUGH OVER-POWER

•

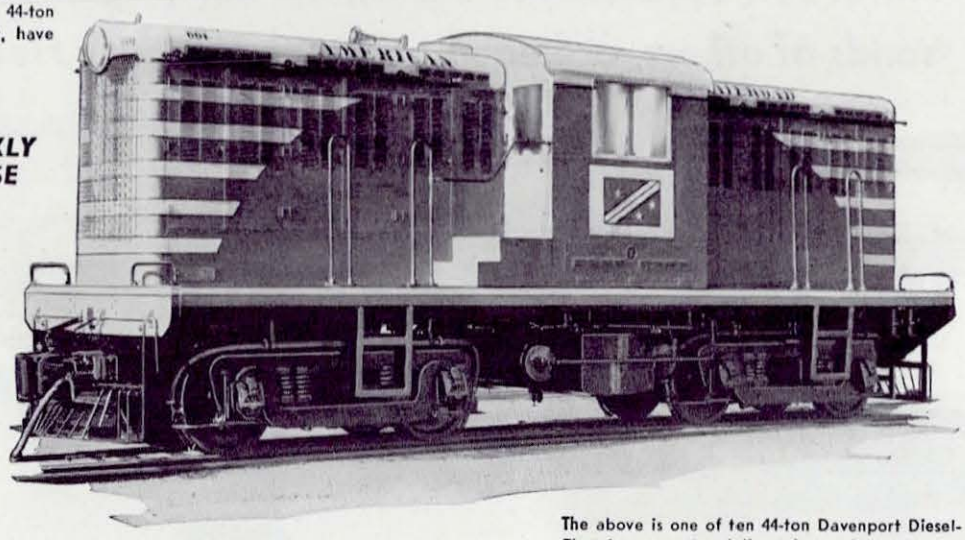
NO ROUNDHOUSE

•

SMOKE-FREE AND QUIET

•

SAFER FOR MEN, LADING AND ROLLING STOCK



The above is one of ten 44-ton Davenport Diesel-Electrics recently delivered to the American Railroad of Porto Rico — a symbol of progress for this fruitful island.

The superb, modern power units which bear the name DAVENPORT have behind them almost 50 years of quality tradition. Thousands have gone into the service of railroads and major industries on every continent. They have won high respect for their consistent record of trouble-free operation at lowest ton mile costs — and their dependability through many years of hard usage.

Get acquainted with Davenport Better-Built Locomotives. They will plug up the leaks of over-power on many locations and will combine flexibility with economy on branch line service. They can be individualized in design to meet special applications.

Complete Information on Request

DAVENPORT LOCOMOTIVE WORKS

A DIVISION OF DAVENPORT BESLER CORPORATION

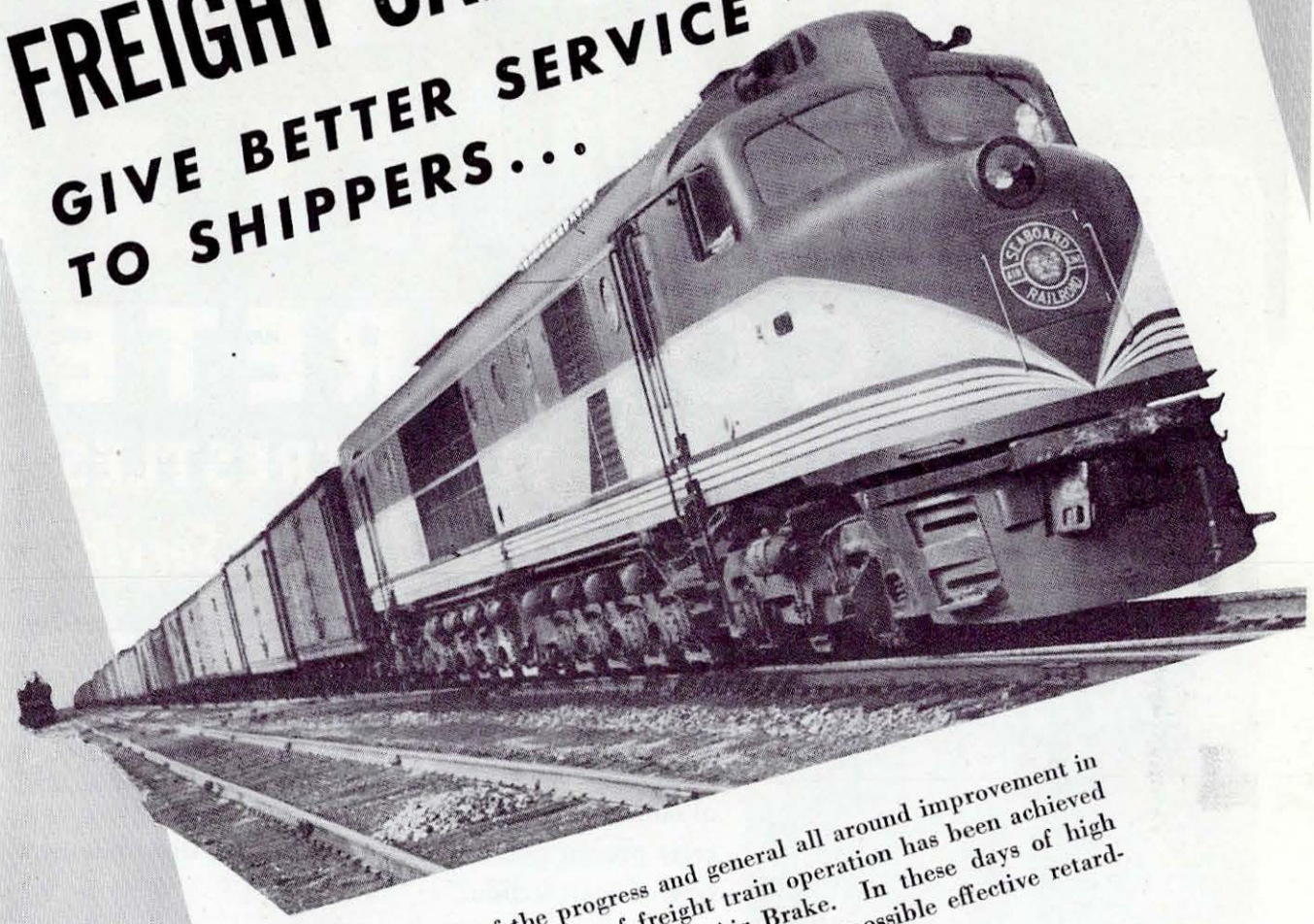
DAVENPORT, IOWA, U. S. A.

Pioneers of the Lighter Diesel Switchers

Export office • Brown & Stites Co., Incorporated, 50 Church St., New York 7 • Cable Address "Brosites"

FREIGHT CARS *with* "AB" Brakes

GIVE BETTER SERVICE TO SHIPPERS...



"AB" BRAKE

Much of the progress and general all around improvement in the efficiency of freight train operation has been achieved with the aid of the "AB" Air Brake. In these days of high speed freight, the "AB" Brake makes possible effective retarding and stopping power.

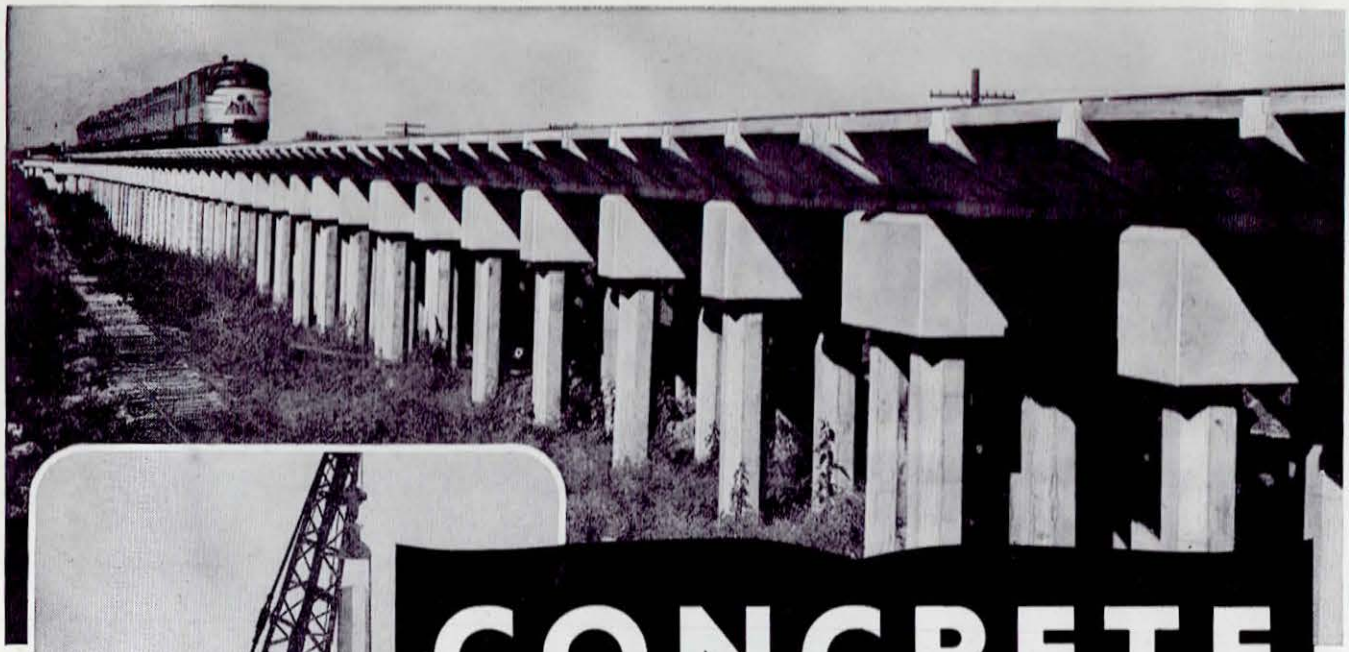
Here's how the service is improved:

- Faster freight train schedules
- Permits with safety, heavier train loads
- Freight car availability increased
- More car miles per day
- Protection to lading and equipment

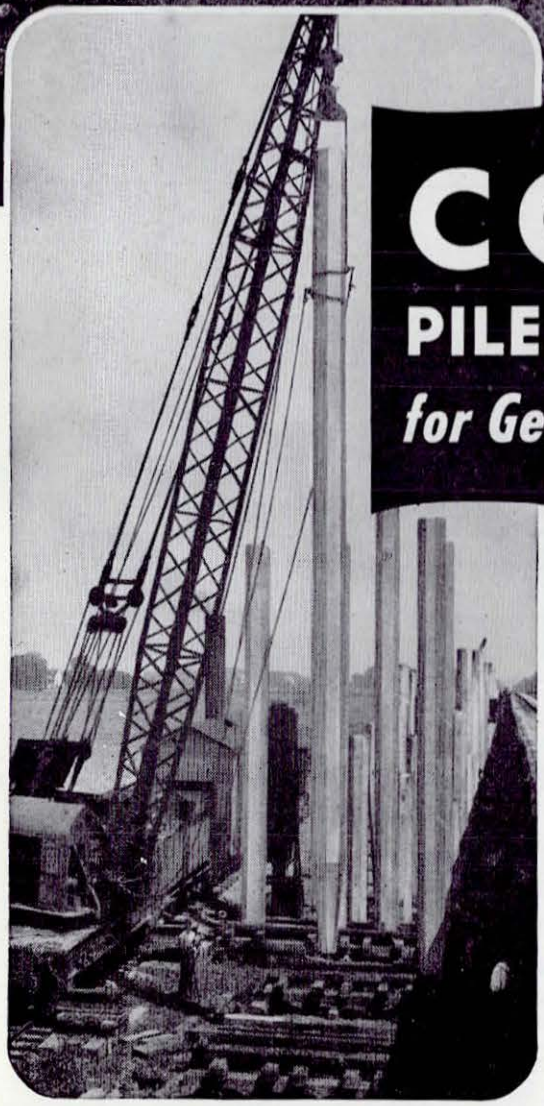
These improvements in operating efficiency not only result in economies for the railroads but assure better service to the shippers.

The New York Air Brake Company

420 Lexington Ave., New York 17, N.Y. Plant: Watertown, N.Y.



CONCRETE
PILE and SLAB TRESTLES
for Generations of Low Cost Service



Upper photo: L & N's famous streamliner, the Georgian, crossing the new concrete pile and slab trestle.

Lower photo: Setting one of the 24 in. diameter precast reinforced concrete piles.

The 11,626-ft.-long trestle contains 629 spans. Each bent consists of three piles; every sixth one is an anchor bent with a double row of piles. Concrete piles are 24 in. octagonal design, mostly 50 ft. long.

When the Louisville & Nashville Railroad decided to replace the old timber trestle at Henderson, Ky., they made a survey to find the most economical type of bridge to build and maintain. Then they chose a reinforced concrete precast pile and slab trestle with a three-pile bent type of construction.

This type, they found, offered the greatest ultimate load-carrying capacity, greater flood resistance, maximum firesafety, lower upkeep and simplicity of construction.

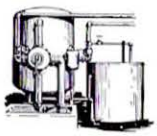
Large precast reinforced concrete piles are preferred for trestles by many American railroads because they (1) give low cost per ton of load capacity, (2) are firesafe, (3) have long life, (4) can be designed to meet a wide variety of climatic, topographic and service conditions, (5) defy termites and other borers.

For help in solving your bridge problems write for a free copy of 80-page booklet, "*Concrete Piles.*" It tells about their design, manufacture and driving. Distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. 5c-26 • 33 W. GRAND AVENUE • CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work



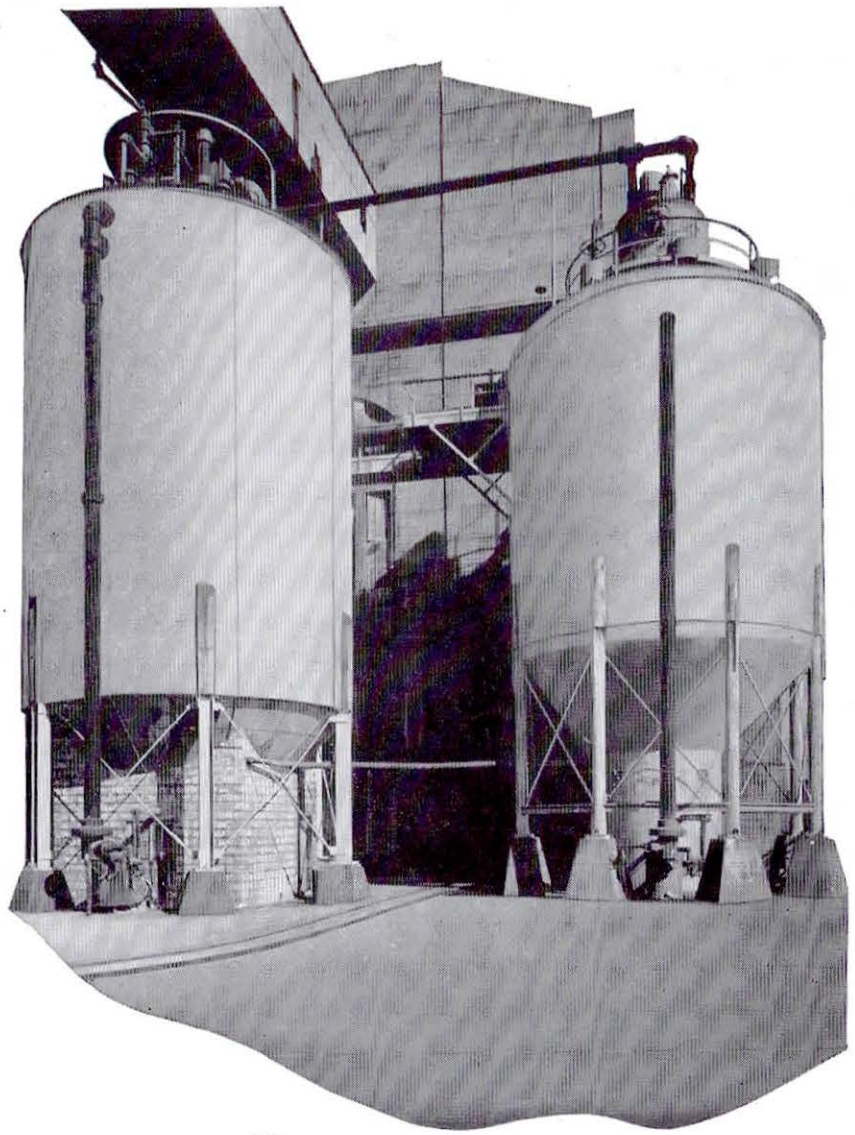
ZEOLITE SOFTENERS

GRAVER

FILTERS

DEMINERALIZERS

REACTIVATORS



THE EQUIPMENT *Experience built*

Successful conditioning of boiler feed or process water depends not only on the type and amount of chemical used, but on the design and construction of the water conditioning equipment . . . and successful design and construction depends upon experience. These units, a Graver hot process softener installation, show experience at work for a major chemical plant.

To solve *your* water conditioning problem, here is the way Graver experience can work for you.

After an analysis of your problem, together with exhaustive laboratory tests of your water supply, Graver chemical engineers will recommend exactly the equipment to deliver the conditioned water you require. Graver process engineers will design the equipment according to the best known standards for pressure or gravity systems. Graver fabricators will build the entire unit including such tanks as are required. And Graver field engineers will erect the installation on the site.

It's a complete service based on experience . . . a service you will find invaluable on your next water conditioning job.

WATER CONDITIONING AND
PROCESS EQUIPMENT DIVISION

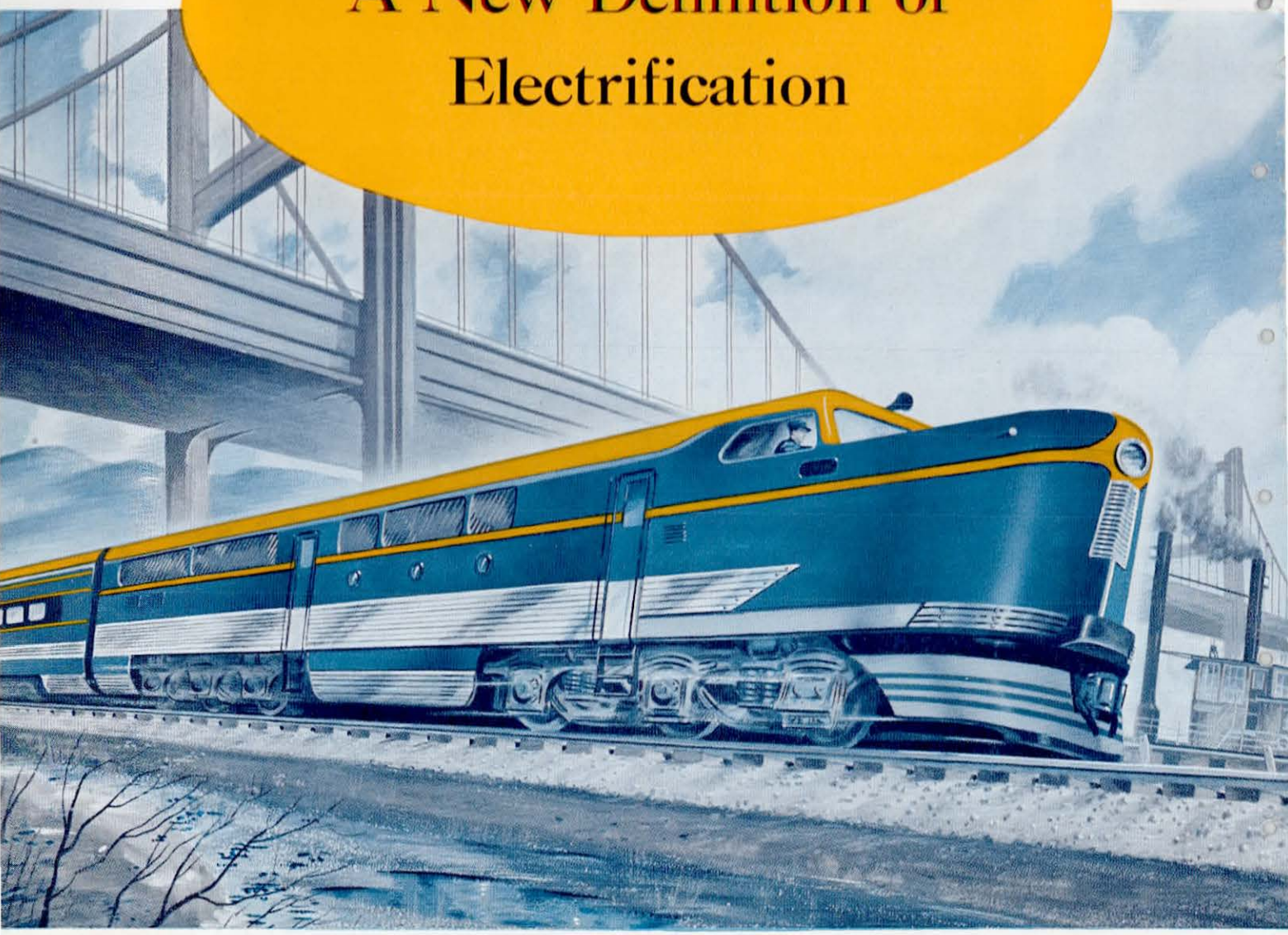
GRAVER TANK & MFG. CO., INC.

East Chicago, Indiana

NEW YORK • PHILADELPHIA • CHICAGO

WESTINGHOUSE PRESENTS

A New Definition of Electrification



Only recently has the true scope of electrification in railroad motive power been recognized. For the truth is, electrification should be identified with all types of electric transmissions for traction. And of the six types of locomotives used today or under development, four of them depend on electric transmission: diesel electric, steam turbine electric, gas turbine electric and electric.

Electric transmission, when used with any type of locomotive, will provide these operating advantages and economies:

1. **Constant rail hp over normal operating range of locomotive.**
2. **Multiplicity of lightly-loaded driving axles; most of locomotive weight used for adhesive purposes.**
3. **Exceptionally high starting and running draw bar pull.**
4. **Decided increase in train tonnage.**
5. **Easy handling of heavy trains.**
6. **Electric braking on long descending grades.**
7. **Marked reduction of helper service over ruling grades.**

★ ★ ★

Diesel Electric

These features, inherent in electric transmission, have materially contributed to the outstanding popularity of the Diesel locomotive and have made possible its application to all types of service: switching, passenger and freight.

Electric

The straight electric locomotive, the foremost example of electric drive, operates without certain restrictions imposed upon other types. For roads with heavy traffic, the electric locomotive can thus provide a standard of operation which is otherwise economically unattainable.

Steam Turbine Electric

The steam turbine locomotive, recently introduced to American railroads, is an excellent answer for those roads which prefer to utilize coal as a fuel. By the use of electric drive, a coal burning locomotive having the same desirable operating characteristics as those enjoyed by the other types becomes a reality with attractive possibilities for expanded use.

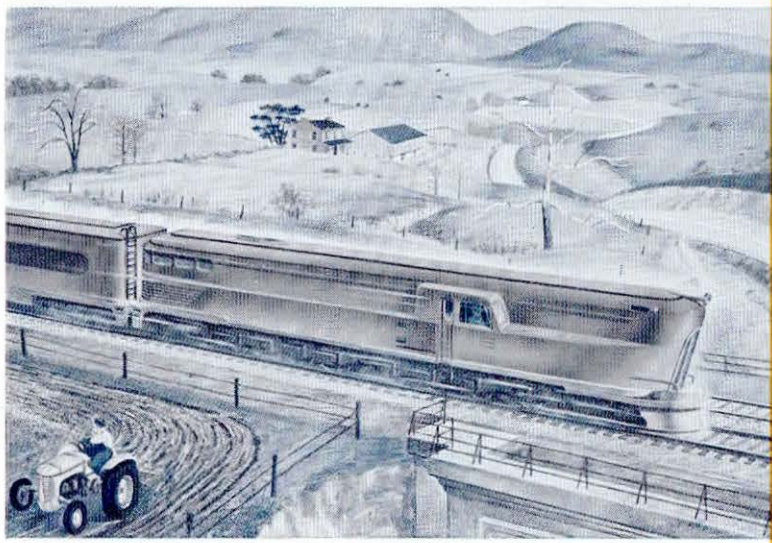
Gas Turbine Electric

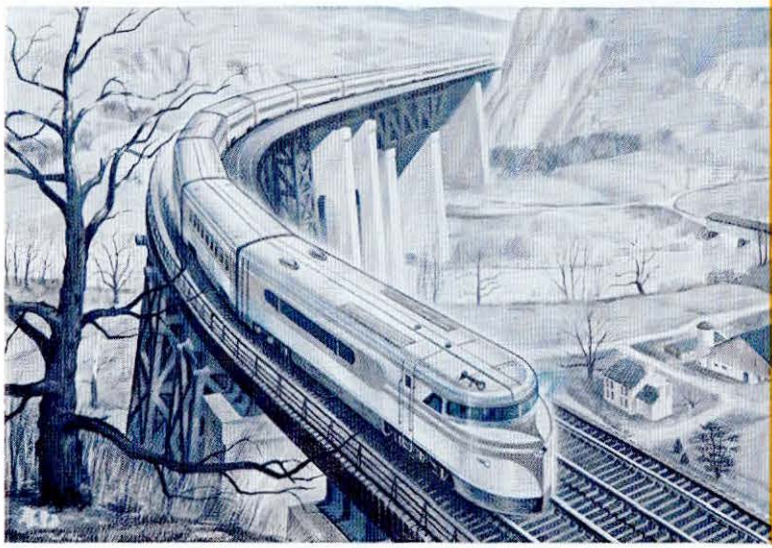
In the near future, the first gas turbine locomotives will enter service. This new form of motive power, so eagerly awaited by the railroads because of its many potentially attractive features, will utilize electric drive, further broadening the trend to this type of traction equipment.

★ ★ ★

In every case of tractive force electrically transmitted to the driving wheels —*regardless of the source of power*—the many important advantages of electrification accrue. It is in this broad concept that Westinghouse presents a new definition of electrification.

J-95137





Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Partner to Railroad Progress

EFFICIENT OPERATION DEPENDS ON *ACCURATE* TIME RECORDS

IBM Attendance Time Recorders and Job Cost Recorders make major contributions to the efficient operation of any business or industry.

The Attendance Time Recorder makes the individual his own timekeeper and protects everyone with impartial and conclusive records of attendance. These legibly printed records facilitate preparation of the payroll.

The Job Cost Recorder provides labor distribution records for each department—each operation—each product—thus affording the close controls over costs that are essential to today's business.

For information on these products and other IBM timing equipment, call the IBM office nearest you.

IBM

TIME RECORDERS AND ELECTRIC TIME SYSTEMS

Proof Machines • Electric Punched Card Accounting Machines and Service Bureau Facilities • Electric Typewriters

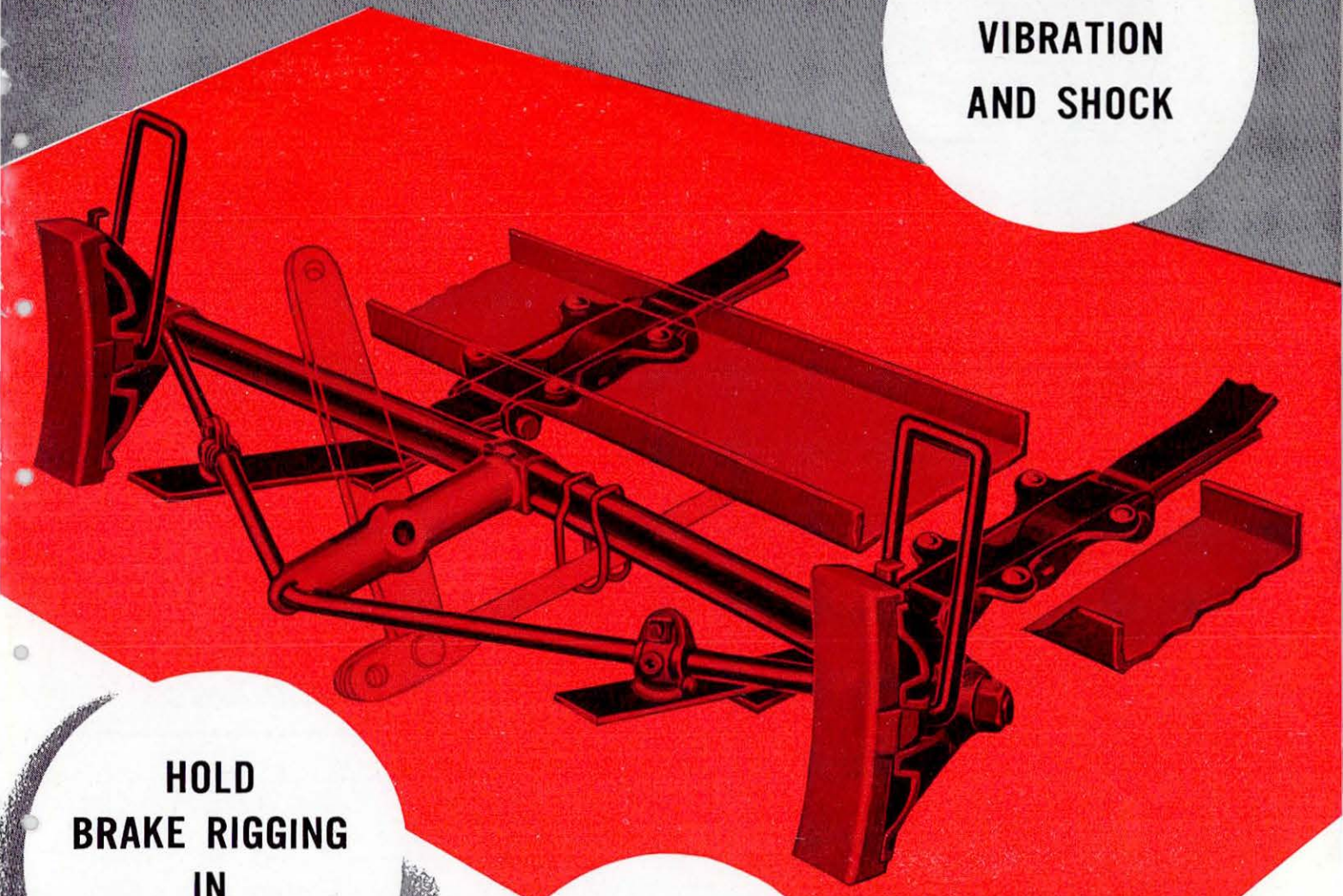
BUY U.S. SECURITY BONDS NOW!

International Business Machines Corporation, World Headquarters Building, 590 Madison Avenue, New York 22, N. Y.

CRECO

BRAKE-BEAM SUPPORTS

ABSORB VIBRATION AND SHOCK



HOLD BRAKE RIGGING IN ALIGNMENT

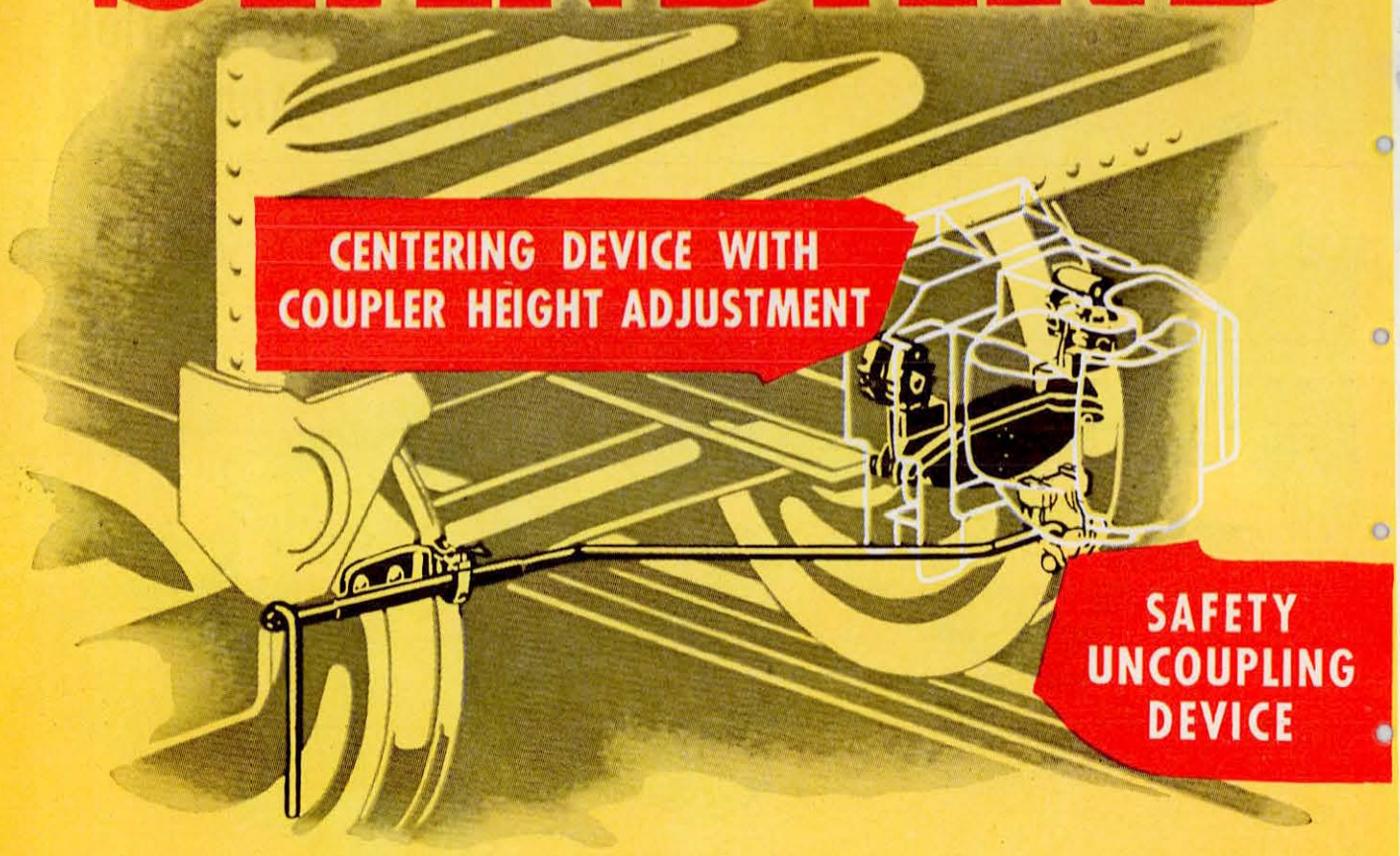
PREVENT BRAKE BEAM FROM FALLING

STANDARD ON MANY RAILROADS

CHICAGO RAILWAY EQUIPMENT CO

McCormick Building, Chicago

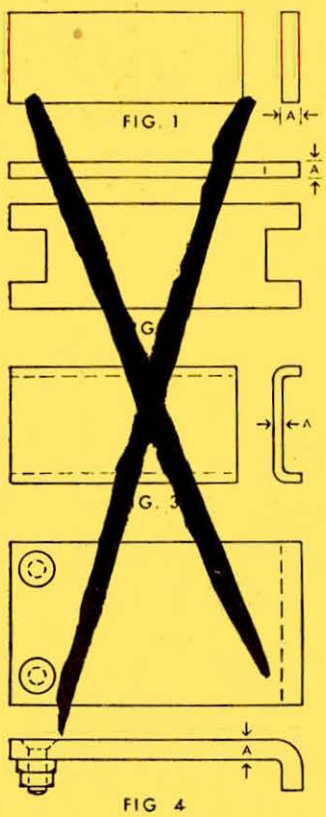
STANDARD

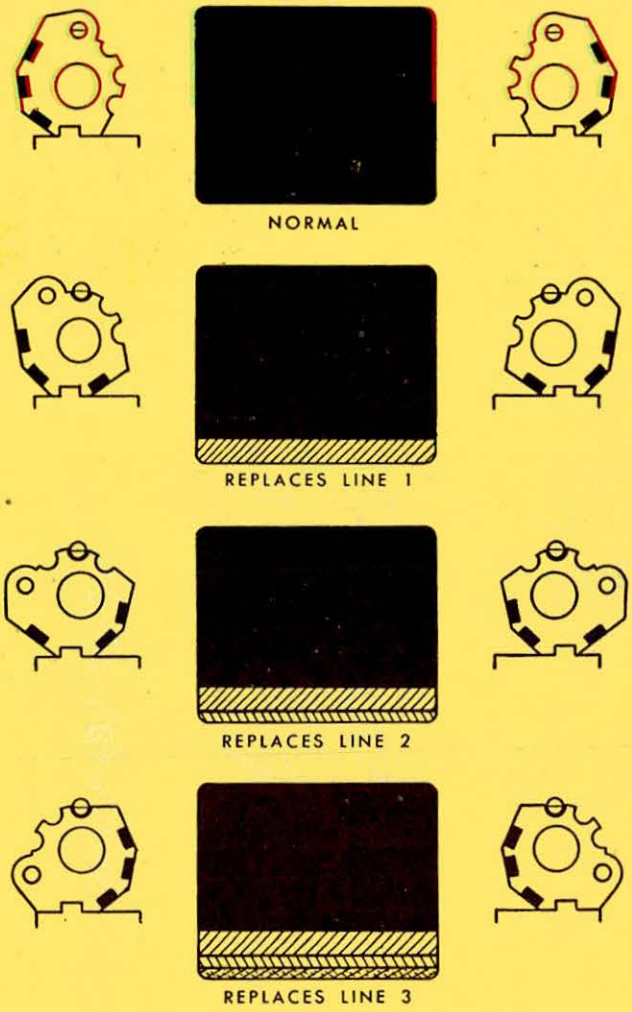


—SHIMS ELIMINATED . . .

with "STANDARD" Centering Device with coupler height adjustment

COUPLER SHIMS





Coupler height is adjusted when necessary by rotating both trunnions to any one of the various positions shown. The hole in each trunnion is off center so that the second position raises the coupler carrier ¼", the third position raises it ⅜", and the fourth position raises it ½".

This eliminates the need of ¼", ⅜", and ½" shims. The knuckle face is raised three times the amount of adjustment at the coupler carrier; that is, ¼" raise at the carrier is ¾" at the knuckle face.

A	Line
1/4"	1
3/8"	2
1/2"	3

SERVICEABILITY RELIABILITY ENDURABILITY

STANDARD
RAILWAY EQUIPMENT MFG. CO.

310 South Michigan Avenue
Chicago 4, Ill.

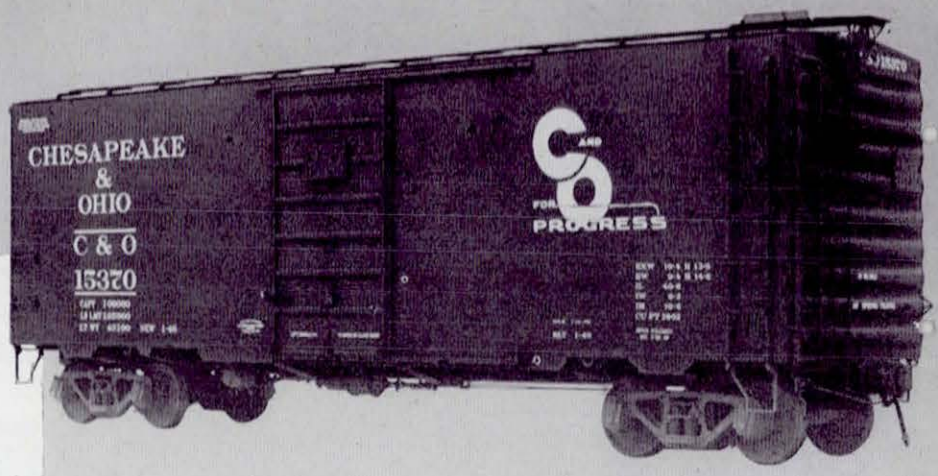
247 Park Avenue
New York 17, N. Y.

PLANTS — Hammond, Ind.
New Kensington, Pa.

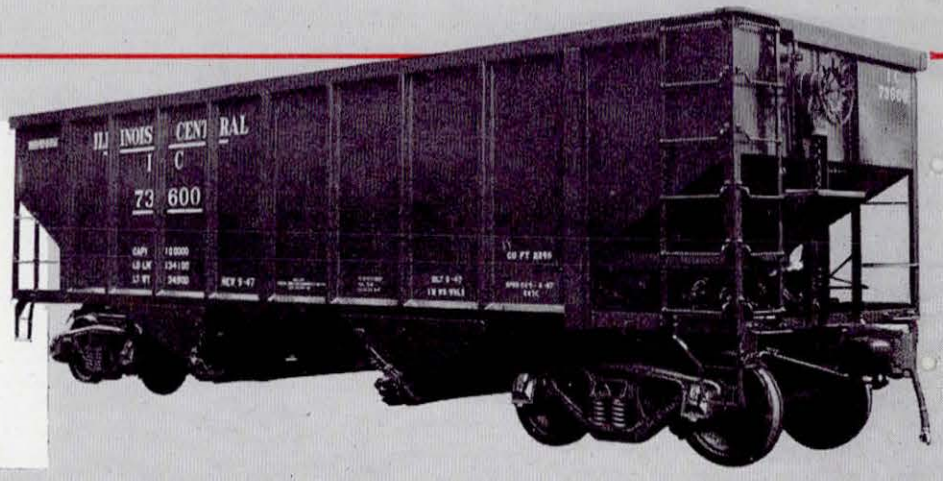
Beat the Car Shortage–

Do what 22 railroads and

Here's how 3 of them used "steel that does more" to beat the car shortage



In 1,000 of these 50-ton box cars built by Pullman-Standard for the **Chesapeake & Ohio,** COR-TEN construction saves 852 lb. of steel per car. These 426 tons of steel saved mean 426 tons of steel released for use in other equipment.



The **Illinois Central** saved 5¼ tons of weight per car in 400 50-ton hoppers like this built by General American—added 5¼ tons of revenue capacity to each car. Instead of 5300 tons of carbon steel they used only 3200 tons of U·S·S COR-TEN. The steel tonnage saved on this one order is sufficient to build 263 additional lightweight COR-TEN hoppers of similar type.

In 1800 gondolas built by **Chicago, Milwaukee, St. Paul & Pacific** in their own shops, by using high-strength steel, mostly COR-TEN, the steel tonnage required was substantially less than would have been needed by former heavy weight construction. This saving in steel allotted for car building, makes possible the construction of more badly-needed cars.

car lines did last year!

By ordering 19,138 freight cars designed *lighter* with U·S·S COR-TEN

they are saving tens of thousands of tons of steel

they are getting 3000 to 4000 more cars than they could build from an equal tonnage of carbon steel

and they are getting better cars—lighter, longer-lasting, and more profitable to operate.

You can do the same. By taking advantage of the greater strength and much higher resistance to atmospheric corrosion packed into U·S·S Cor-Ten you can get *more* car units out of every ton used—and make your steel supply go farther.

Simply by using U·S·S Cor-Ten in thinner, lighter sections in place of conventional heavy carbon steel construction, some specific designs save enough steel on a 1000 car order to build 300 *additional* 50-ton box cars—or 325 *more* hoppers . . . or 230 *extra* 70-ton flat cars.

Without using more steel, but by using steel that does more, you can produce an average of 28% more units from every ton—put that many more cars into operation to serve your shippers.

And because these Cor-Ten cars that save steel also save weight—which can be directly translated into added carrying capacity—*every* car you build does more. It can carry more payload. It costs less to operate empty. Fewer of these cars are needed to carry a given amount of freight. Less fuel is required to haul a given length of train. Saving weight to save steel to beat the steel shortage is not only good sense, but sound economics, too.

How much more does it cost to use steel that does more?

The answer is—little or nothing

Based on the cost *per ton of capacity*, Cor-Ten equipment may actually cost less than conventional heavy construction. Based on the cost per car, Cor-Ten equipment can be built at little or no increase in cost. Why? Because U·S·S Cor-Ten, like plain steel, can be readily fabricated—because an average of 22% less steel is required per car, with consequent reductions in steel shipping costs—because your fixed charges can be spread over 28% more units per ton.

Our engineers will gladly show you how you can use U·S·S Cor-Ten to beat the car shortage by getting *bonus* production from your steel supply—and also how to make your equipment more modern, more efficient and more revenue-producing.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND · CHICAGO · NEW YORK
CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS COAST TO COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

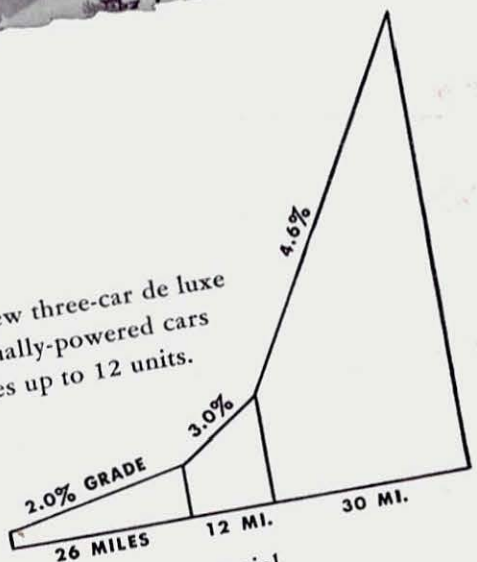
USS

U·S·S HIGH STRENGTH STEELS

UNITED STATES STEEL

The Train

. . . Colombian National Railways' new three-car de luxe coach train—now being built—with individually-powered cars that operate singly or in multiples up to 12 units.



The Service

. . . a fast schedule between Ibague, important commercial center, and Bogotá, Colombia's capital—a 68-mile climb up the long, heavy grades of the Andes to an altitude of 9000 feet.

The Power

. . . four Series NHS-600 Cummins Diesel Engines, producing together a maximum of 1100 hp at sea level . . . driving through electric transmissions with electric braking. Colombian National Railways have powered motorcars with Cummins *Dependable* Diesels for more than eight years.

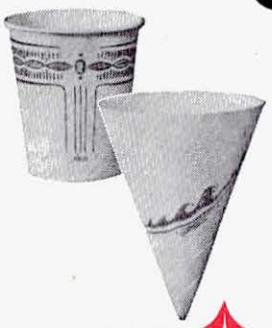
CUMMINS *Dependable* DIESEL

SINCE 1918...PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS

CUMMINS DIESEL RAILROAD EQUIPMENT COMPANY, INC.
1111 Grinnell Place • New York 59, New York

ONLY DIXIE DISPENSERS allow you to use

EITHER TYPE OF CUPS



NEW RECESSED DISPENSER

Fits flush with bulkhead. Harmonizes with most modern of car interiors. Beautiful satin-chrome finish. Holds flat-bottom Dixies or cone-shaped Vortex Cups—either large or small sizes.

STREAMLINER

Trim, smart, easy to mount anywhere. Clear plastic window shows when it's time to refill. Holds flat-bottom Dixies or cone-shaped Vortex Cups—either large or small sizes.

SPACE-SAVER

New small dispenser. Takes minimum space in roomettes, compartments.

Dixie Cup Dispensers **alone** are made with interchangeable cup adapters—to accommodate either flat-bottom Dixie Cups or cone-shaped Vortex Cups.

Take Large or Small Sizes, too

What's more, only Dixie dispensers accommodate either **large** or **small** size cups, of either shape.

Consider this exclusive, interchangeable Dixie feature carefully before you install another cup dispenser. It's convenient . . . it's economical. It's just one of the many ways Dixie has foreseen your needs—during a quarter century of furnishing America's railroads with dependable, precision-built . . .

DIXIE CUPS

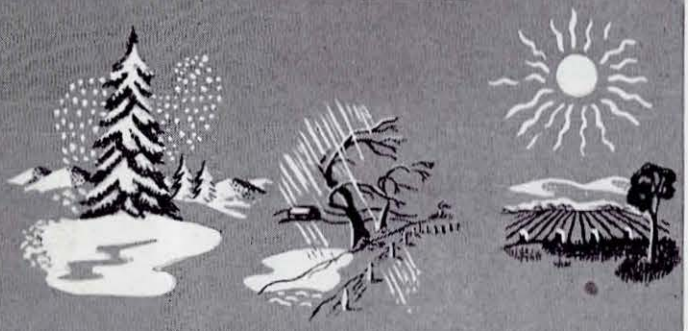
AND VORTEX CUPS

Special imprinting of cups with your insignia, slogan, name or other message — to your order. Write to Railroad Department, Dixie Cup Company, Easton, Pa.

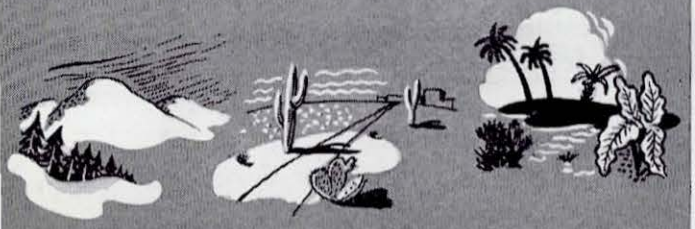
"Dixie" is a registered trade mark of the Dixie Cup Company

EDWARDS DOUBLE GLAZED SASH FOR CONSTANT, BRILLIANT VISIBILITY

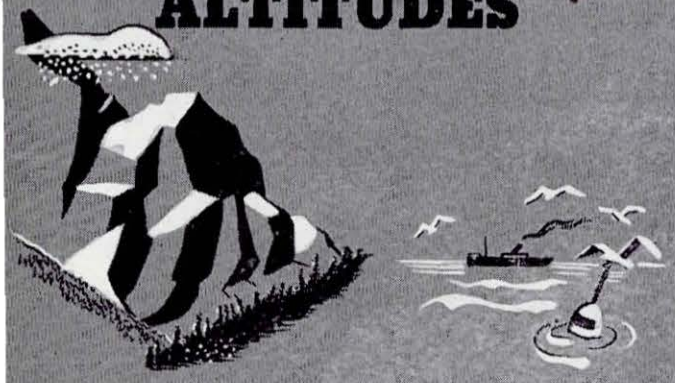
IN ALL SEASONS



CLIMATES



ALTITUDES



In addition to new installations, it is extremely practicable and economical to replace old windows with Edwards Double Glazed Units. Plan now to modernize your equipment with Edwards Sash. For complete information, write:

THE O. M. EDWARDS CO., INC.
Syracuse 4, New York

In Canada:
O. M. EDWARDS CO. OF CANADA LIMITED
Offices and Plant
4000 NAMUR ST., MONTREAL 16

EDWARDS SASH
THE EYES OF TRANSPORTATION

SASH FOR EVERY TYPE OF TRANSPORTATION — ON LAND, ON THE SEAS, IN THE AIR

The Third Lot— 22 More 2-8-4's for the L & N

One of a previous lot of these 2-8-4's for the L & N

to be COMMONWEALTH *Equipped*

The first two lots of these modern, powerful, steam locomotives for freight service, built in 1942 and 1944, are equipped with COMMONWEALTH locomotive beds, water-bottom tender frames, engine trucks, and trailer trucks.

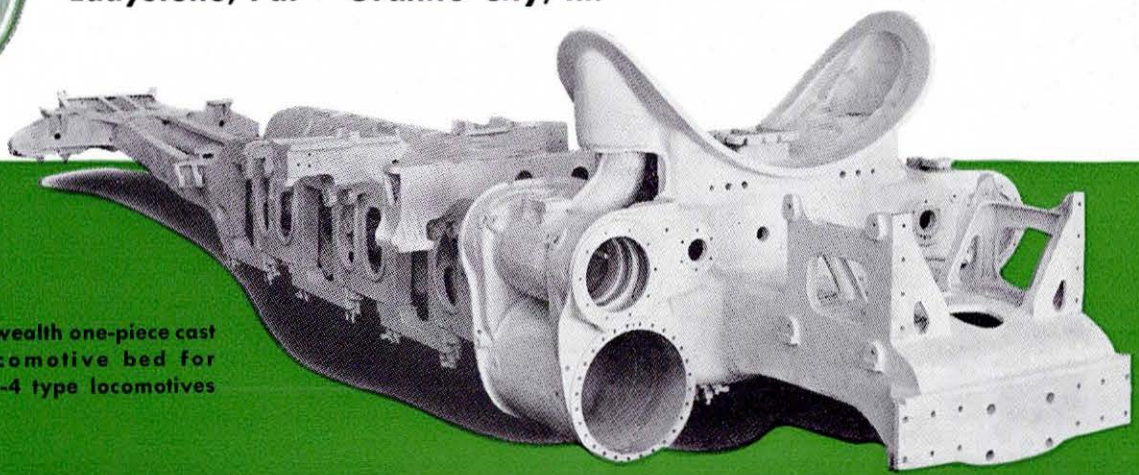
In addition to the above devices, the third lot, just ordered, will be further improved and modernized with latest design COMMONWEALTH 6-wheel straight equalizer type tender trucks and BOXPOK driving and trailer wheels.

It is significant that the third lot of these locomotives for the L & N Railroad *will be completely equipped* with COMMONWEALTH cast steel devices.

For lowest operating costs and highest availability, specify COMMONWEALTH products.

GENERAL STEEL CASTINGS

Eddystone, Pa. • Granite City, Ill.



Commonwealth one-piece cast steel locomotive bed for L & N 2-8-4 type locomotives

Asphalt Specialties

Serving America's Railroads

CAR CEMENTS
INSULATIONS
SOUND DEADENERS
ROOF COATINGS
RUST INHIBITORS
SPECIALTY PAINTS
MASTICS
SEALERS

Special products manufactured to meet exacting railroad specifications

Witco's "Quality Controlled" asphaltic products have been supplied to industry for over a quarter of a century.

Witco Research is constantly improving present products and developing new ones for the use of modern railways.

Constant laboratory control of production assures uniformity, dependability and quality so necessary in railroad service.

Witco offers the facilities of its modern Research Laboratory in Chicago to assist in the solution of your problems. Write today for information or a technical representative will call at your request.

Witco Chemical Company

Railway Products Division

435 North Michigan Ave., Chicago 11, Illinois

New York • Boston • Cleveland • Akron • Detroit • San Francisco • Los Angeles • London, England

"WELL, I SEE MRS. THOMPSON GOT CAUGHT IN HIS SCRAP COLLECTION!"...

MORE AND MORE SCRAP IS NEEDED FOR HIGHER STEEL PRODUCTION.

Collect and Ship Your Scrap Now!

CONSULT OUR NEAREST OFFICE FOR THE SALE OR PURCHASE OF SCRAP

LURIA BROTHERS & COMPANY, INC.

Main Office

LINCOLN-LIBERTY BLDG.
PHILADELPHIA 7, PENNSYLVANIA

Yards

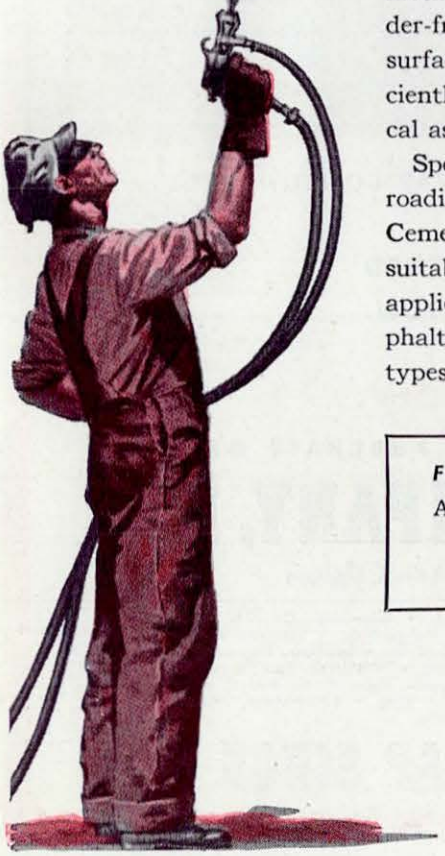
LEBANON, PA. • READING, PA. • PITTSBURGH, PA.
MODENA, PA. • DETROIT (ECORSE), MICH.
TOLEDO, OHIO

Branch Offices

Boston, Mass.—Statler Bldg. • **Cleveland, O.**—1022 Midland Bldg. • **Houston, Texas**—Cotton Exchange Bldg. • **Lebanon, Pa.**—Luria Bldg. • **Chicago, Ill.**—100 W. Monroe St. • **Reading, Pa.**—Luria Bldg. • **New York, N. Y.**—Woolworth Bldg. • **Pittsburgh, Pa.**—Oliver Bldg. • **Detroit, Mich.**—2011 Book Bldg. **Pueblo, Colo.**—P. O. Box #1596 • **St. Louis, Mo.**—2110 Railway Exchange Bldg. • **Birmingham, Ala.**—Empire Bldg. • **Buffalo, N.Y.**—Genesee Bldg.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

FOUNTAIN OF YOUTH FOR ROLLING STOCK



Flying gravel, seeping moisture and cinder-laden wind can make freight cars grow old fast.

Protect your rolling stock against these hazards with tough, quick-drying Flintkote Car Cements. Couplers, metal ends, slope sheets, trucks, under-frames . . . any vulnerable metal surfaces . . . can be quickly and efficiently protected with these economical asphalt-base compounds.

Specially formulated to meet railroading requirements, Flintkote Car Cements are available in consistencies suitable for spray, brush or trowel application. Or, you can specify asphaltic emulsions of a wide range of types, fibrated or non-fibrated. Flintkote Railroad Emulsions are "tops" in withstanding weather and severe exposures in the railway field.

More than forty years of research and successful experience are behind the manufacture of Flintkote Railroad Products. Our technical specialists are ready to cooperate with you in the solution of individual problems. Write today, and learn more about Flintkote's fountain of youth for your rolling stock.

THE FLINTKOTE COMPANY
INDUSTRIAL PRODUCTS DIVISION
30 Rockefeller Plaza, New York 20, N.Y.

ATLANTA • BOSTON • CHICAGO HEIGHTS
DETROIT • LOS ANGELES • NEW ORLEANS
WASHINGTON • TORONTO • MONTREAL

FLINTKOTE MAKES A COMPLETE LINE OF SPECIALIZED RAILROAD PRODUCTS

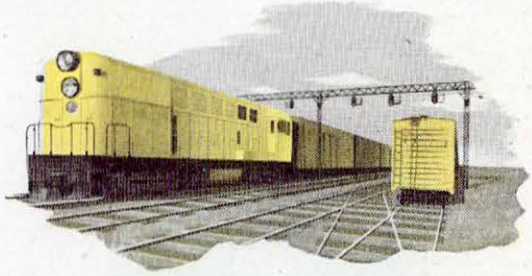
Asphalt Protective Coatings . . . Car Cements . . . Insulation Coatings . . . Cold-Laid Mastic Flooring Emulsions . . . Building Materials . . . Materials for Waterproofing and Dampproofing.

FLINTKOTE

Products for Industry

"Handled With Care . . ."

Watch a Fairbanks-Morse Diesel locomotive ease up to a car of "breakables"— eggs, for instance . . . watch it make the coupling without a jar. This is work that requires maximum tractive effort at minimum speeds . . . and motive power superintendents credit the exclusive Fairbanks-Morse "soft start" feature for making such performance possible. Fairbanks, Morse & Co., Chicago 5, Illinois.



When it comes to locomotives . . .

FAIRBANKS-MORSE

A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALES • MOTORS • GENERATORS • PUMPS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

Only GOULD Has It!

In the Gould Research Laboratory, a Cathode-Ray Oscillograph is being used for the first time in the battery industry. It gives voltage readings in one millionth of a second.

A complete research laboratory with pilot manufacturing plant where advance-design batteries are constantly created—and proved before production.

Only Gould has such a concentration of research equipment for the improvement of storage battery design. The Cathode-Ray Oscillograph is just one example. It provides information, hitherto unavailable, on battery performance under surges and instantaneous loads. It delivers data that is leading to the first true balance between grid design and active material—that means dollars to you in dependability and extra life. Research like this gives you better batteries first from GOULD—FOR FIFTY YEARS THE CHOICE OF ENGINEERS.

The Gould "Thirty"—America's Finest Industrial Truck Battery!

GOULD

STORAGE BATTERY CORPORATION

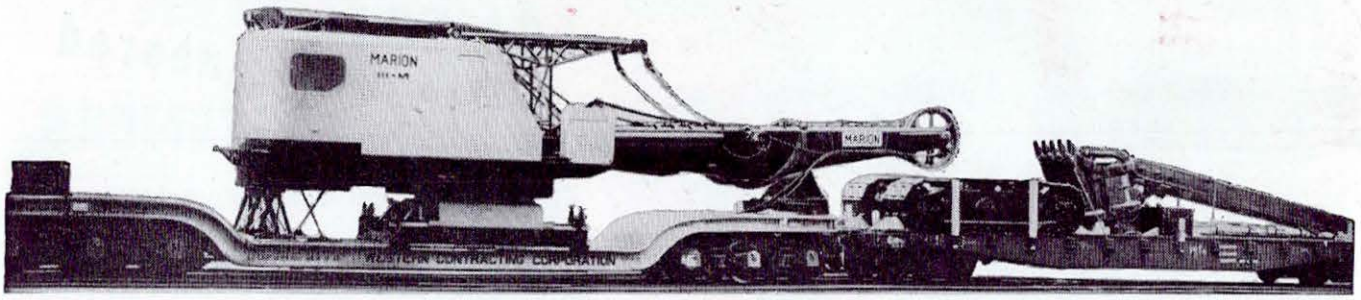
Including the Storage Battery Division of Philco Corporation

TRENTON 7, NEW JERSEY

Always Use Gould Automobile and Truck Batteries

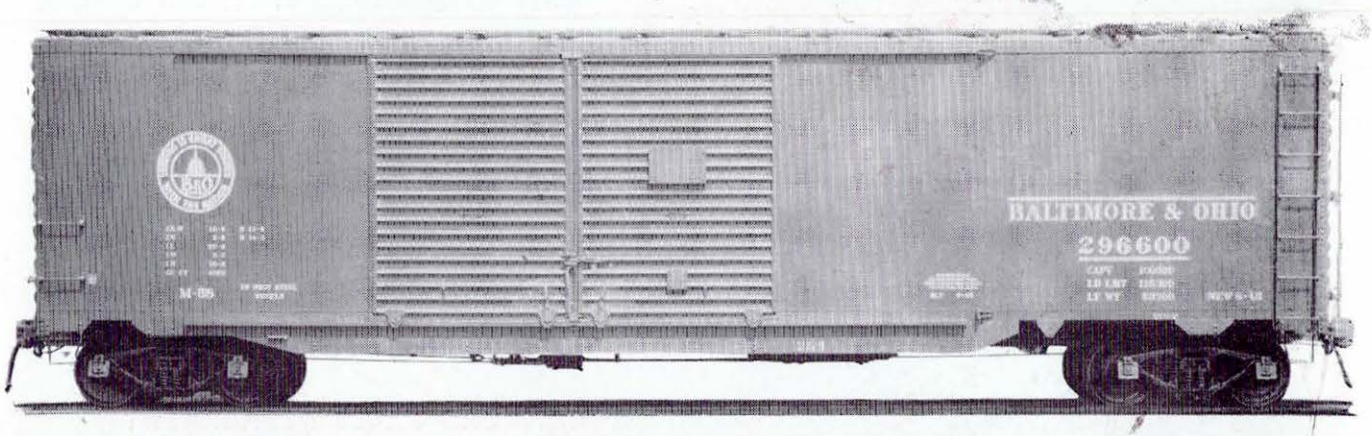
GREENVILLE STEEL CAR COMPANY

(SUBSIDIARY OF PITTSBURGH FORGINGS COMPANY)



Depressed Flat Loaded, One of the Many Uses of a Car of This Type

Capacity .....250,000 lbs. Length Well.....25 ft. 0 in.



GREENVILLE PENNSYLVANIA

GULF BLDG., PITTSBURGH, PA. B-254 GENERAL MOTORS BLDG., DETROIT, MICH.

Holding Glamor Together!

LAMSON Railroad Engineered FASTENERS

From cab to caboose—from trucks to observation turrets—on freights and streamliners you'll find Lamson quality fasteners riding the rails of America.

They perform their vital tasks unsung and unnoticed—except by the maintenance men who keep the trains in condition.

They, and the original car builders, know that for rugged dependability Lamson Fasteners are unexcelled. That's why so many railroad men *always* look to Lamson for fasteners!

For full details send for this new booklet.

RAILROAD SALES DEPARTMENT
THE LAMSON & SESSIONS COMPANY
1971 West 85th Street • Cleveland 2, Ohio
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

NAILABLE STEEL FLOORING*

Keeps Gondolas Off the Rip Tracks— Out of the Shops

NAILABLE STEEL FLOORING helps keep gondolas off the Bad Order Report, saves you money in floor repair and replacement costs. Check these points that show *why* NAILABLE STEEL FLOORING cuts floor maintenance costs and keeps cars where they belong—on the line, bringing in revenue.

Greater Strength—Channel design gives NAILABLE STEEL FLOORING higher strength, more resistance to dishing than steel plate floors. After months of grinding impacts from magnets, hot pig iron and the clamshell shown, the NAILABLE STEEL FLOOR in a test car retained its over-all flatness and nailability, its suitability for blocked and skidded loads.

No Nail Damage—Nails can't rip or splinter NAILABLE STEEL FLOORING, can't damage it in *any* way. Held tighter than in wood, the proper size nails (20d or 30d in gondolas) are easily driven into the nailing grooves and can be readily removed.

High Rust Resistance—NAILABLE STEEL FLOORING is safer from rust because it's made from N-A-X HIGH-TENSILE steel which has three to five times the corrosion resistance of plain carbon steel and more than twice that of copper-bearing steel.

Combining nailability and strength, NAILABLE STEEL FLOORING does the job of both wood and conventional steel plate floors—and does each of them better. It saves money in operating as well as maintenance costs. When your next new car or rebuilding program comes up specify NAILABLE STEEL FLOORING.

NO TORN UP PLATES. This photograph shows gondola service at its roughest. Big clamshells like this ten-ton giant often tear rivet heads out of steel plate floors and rip up the cover plates. NAILABLE STEEL FLOORING *cannot* be torn up because it has no projecting rivet heads, no plate edges.

*PATENTS PENDING

NAILABLE STEEL FLOORING

A GREAT LAKES STEEL PRODUCT

GREAT LAKES STEEL CORPORATION

STEEL FLOOR DIVISION • PENOBSCOT BUILDING • DETROIT 26, MICHIGAN

UNIT OF NATIONAL STEEL CORPORATION

When the elements obscure hand and light signals, when lack of communication slows a fast freight to a crawl, the Motorola Radiotelephone-equipped train highballs through the night—the engineer, conductor and dispatcher in constant contact for split second safe action at all times.

Motorola Radiotelephone speeds yard operations, car checking and hump operations, too, stepping up car turnover and enabling each car to carry more freight. Installing Motorola Radiotelephone is like adding cars to your line.

Call in your Motorola Communications Engineer to show you how Motorola Radiotelephone saves time and money as it improves your service. Let him show you Motorola's record of efficiency on the Milwaukee Road, the Union Pacific and the Rock Island Lines. He'll give you FACTS, not fiction—FIGURES, not fables. WRITE TODAY.

Before you buy, COMPARE, and you'll choose Motorola

LEADERSHIP

Motorola manufactures and installs more radiotelephone equipment than any other—*BAR NONE*. Motorola has more radiotelephone engineers in their laboratories and in the field than any other manufacturer—*BAR NONE*. Motorola has the largest radiotelephone research laboratory and more product development than any other—*BAR NONE*.

ADVANCED DESIGN

Only Motorola guarantees full channel utilization through "PRECISION SELECTIVITY." P.S. provides extraordinary channel protection from nearby central stations and other man-made interference.

RUGGED CONSTRUCTION

It's a proved fact! The many oversized components, the high quality and skilled engineering that go into all Motorola communications equipment pay off in lasting satisfactory service.

OVER-ALL COST

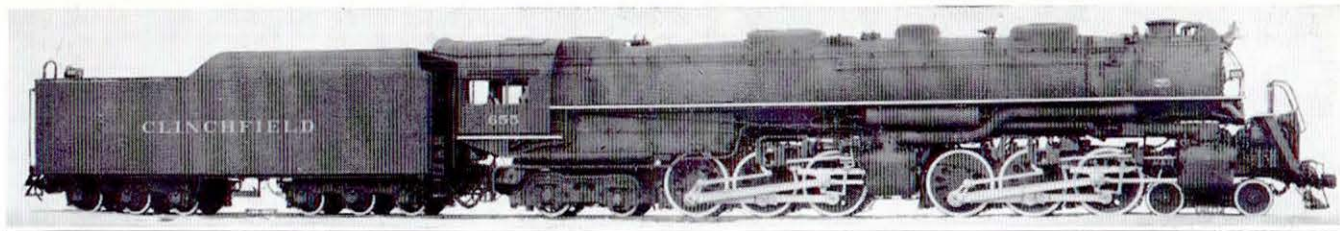
It's been proved! Motorola continues to operate when others fail . . . costs you far less over the years than any other despite initial price.

PROVED PERFORMANCE

Officially proved! Time after time on really tough jobs where other equipment failed—Motorola more than made the grade. Hundreds of reports cite Motorola equipment as giving unbeatable service for over six years, with only routine maintenace required.

Motorola Inc.
COMMUNICATIONS DIVISION
4545 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS
IN CANADA: Rogers Majestic Ltd., Toronto—Montreal

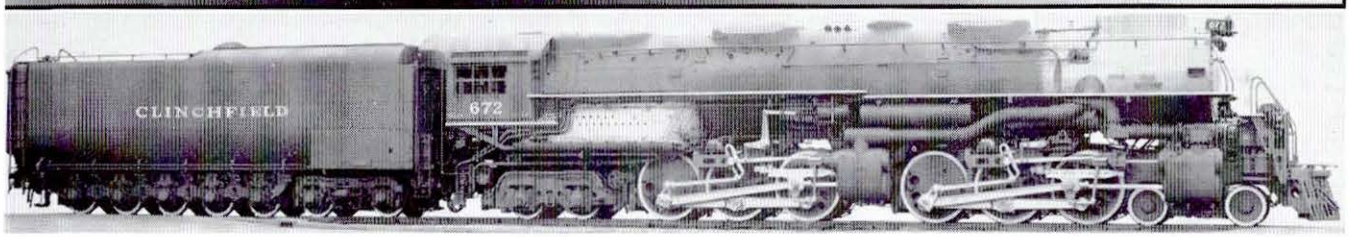
Motorola
FM 2-WAY Radiotelephone



18 Modern 4-6-6-4's on

Clinchfield Route
QUICK SERVICE-SHORT LINE BETWEEN THE CENTRAL WEST & SOUTHEAST

Standard Stoker Equipped



Clinchfield Railroad Train No. 92 with 4-6-6-4 type locomotive No. 672, crossing Broad River Viaduct

QUICK SERVICE—SHORT LINE between the Central West and Southeast is the Clinchfield's motto. To live up to the standard set for itself this road has in the past few years acquired 18 modern 4-6-6-4 steam locomotives to supplement their already large fleet of coal burning engines. Standard Stokers on the new as well as existing locomotives add considerably to their reliability in service, insure higher speeds and increased tonnage.

Because the Clinchfield is an important link between the rapidly growing industries of the South and the many railroads serving this territory, it must provide quick and dependable service. Standard Stoker equipped steam locomotives easily manage the heavy tonnage passing over this road.

THE STANDARD STOKER COMPANY, INC
NEW YORK • CHICAGO • ERIE • MONTREAL

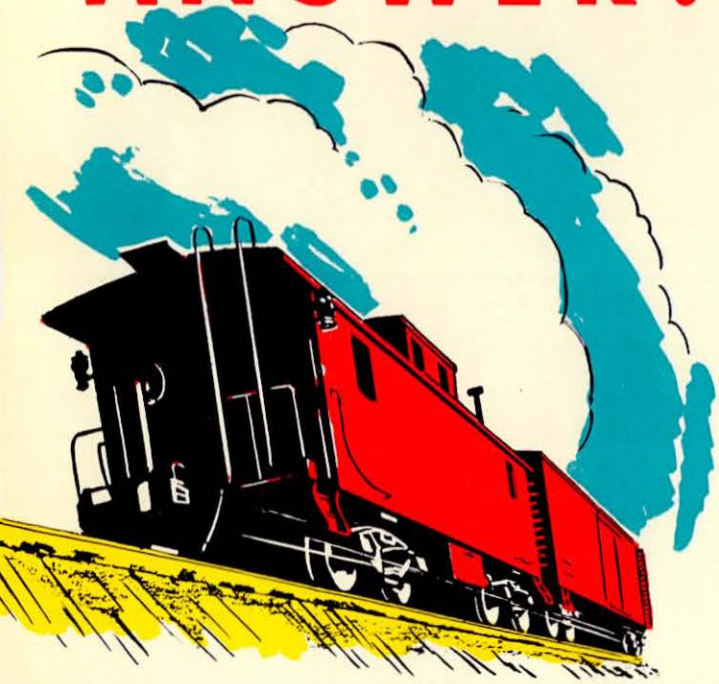
SSC

What do these items of HAVE

. . A BANANA

. . . A PIECE OF SEWER PIPE

ANSWER!



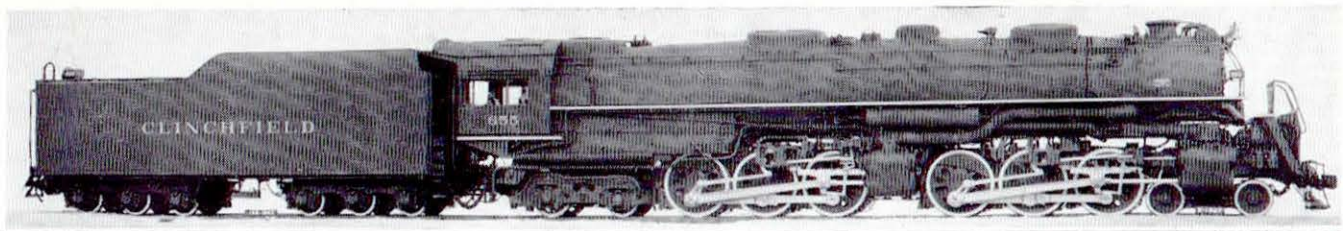
Cabooses, too, ride smoother with

WAUGHMAT TWIN CUSHIONS

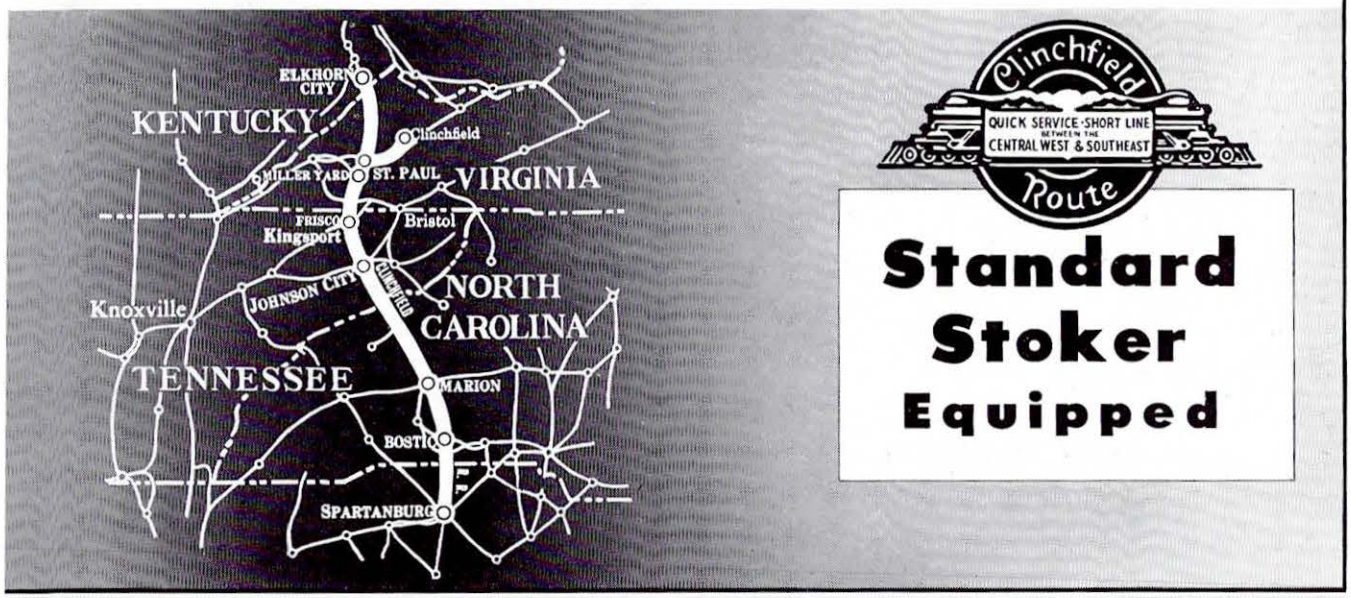
All of these items are fragile freight . . . chief offenders in the high cost of car-lot shipment lading damage.

With today's speedup of freight car handling, the only positive safeguard against lading damage lies in better cushioning of the longitudinal shocks which in turn provides comparable reductions in vertical and horizontal shocks.

To protect fragile freight and move it faster with less damage in transit, the answer is to equip all cars with Waughmat Twin Cushions.

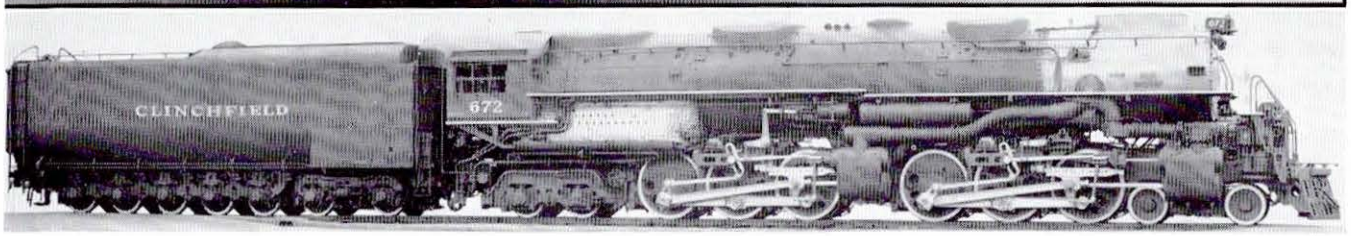


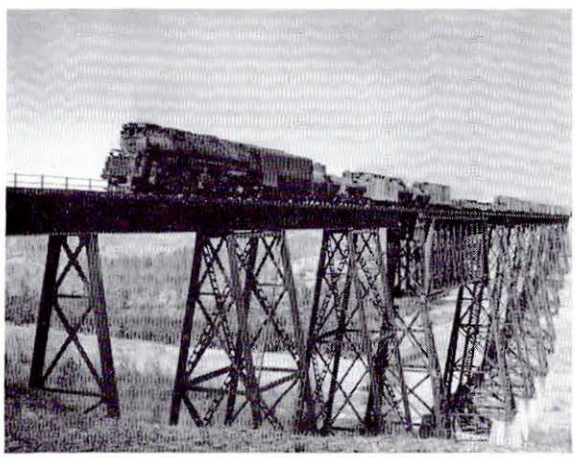
18 Modern 4-6-6-4's on



Clinchfield
QUICK SERVICE-SHORT LINE BETWEEN THE CENTRAL WEST & SOUTHEAST
Route

Standard Stoker Equipped





Clinchfield Railroad Train No. 92 with 4-6-6-4 type locomotive No. 672, crossing Broad River Viaduct

QUICK SERVICE—SHORT LINE between the Central West and Southeast is the Clinchfield's motto. To live up to the standard set for itself this road has in the past few years acquired 18 modern 4-6-6-4 steam locomotives to supplement their already large fleet of coal burning engines. Standard Stokers on the new as well as existing locomotives add considerably to their reliability in service, insure higher speeds and increased tonnage.

Because the Clinchfield is an important link between the rapidly growing industries of the South and the many railroads serving this territory, it must provide quick and dependable service. Standard Stoker equipped steam locomotives easily manage the heavy tonnage passing over this road.

THE STANDARD STOKER COMPANY, INC
NEW YORK • CHICAGO • ERIE • MONTREAL

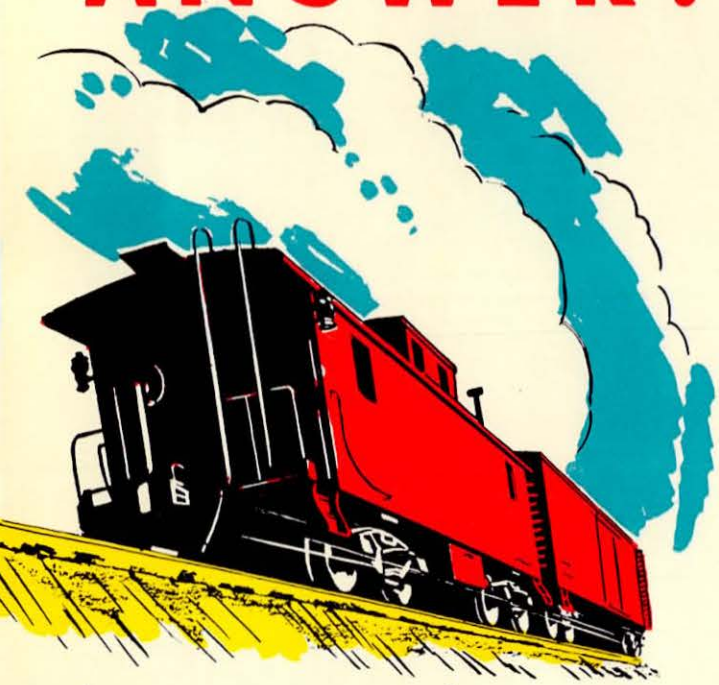
SSC

What do these items of HAVE

. . A BANANA

. . . A PIECE OF SEWER PIPE

ANSWER!



Cabooses, too, ride smoother with

WAUGHMAT TWIN CUSHIONS

All of these items are fragile freight . . . chief offenders in the high cost of car-lot shipment lading damage.

With today's speedup of freight car handling, the only positive safeguard against lading damage lies in better cushioning of the longitudinal shocks which in turn provides comparable reductions in vertical and horizontal shocks.

To protect fragile freight and move it faster with less damage in transit, the answer is to equip all cars with Waughmat Twin Cushions.

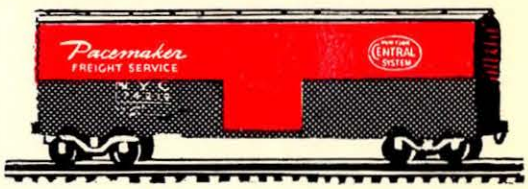
lading . . .

IN COMMON?

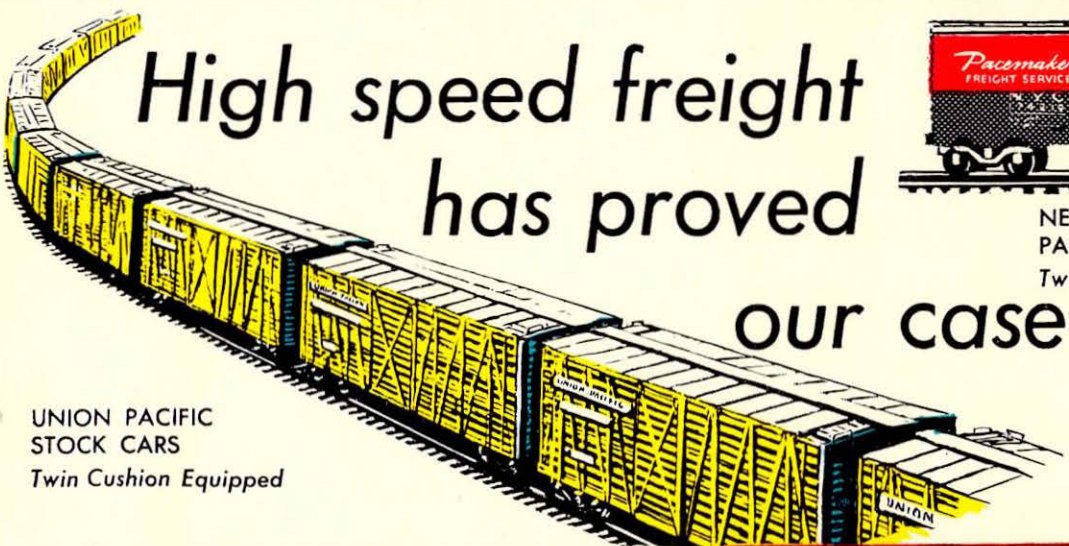
. . . A WESTERN STEER

. . . A BOTTLE OF BEER

High speed freight has proved our case



NEW YORK CENTRAL
PACEMAKER CARS
Twin Cushion Equipped



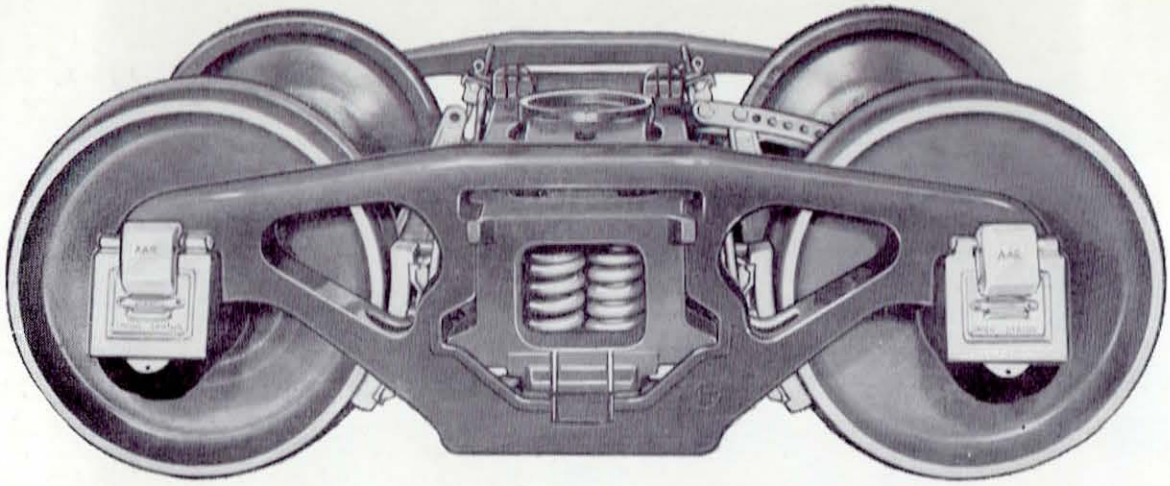
UNION PACIFIC
STOCK CARS
Twin Cushion Equipped

TO PROTECT LADING
AND ROLLING STOCK
EQUIP ALL CARS WITH

WAUGHMAT
Twin Cushions★

★Trade Mark

WAUGH EQUIPMENT COMPANY,
New York · Chicago · St. Louis · Canadian Waugh Equipment Company: Montreal



For High Speed Freight Service...

a swing motion passenger type truck in the price range of freight trucks

McConway & Torley

Multiple Load

TRUCK

Excels in Quality, Performance and Endurance

Note these service-tested features...

- **ALL COIL SPRINGS** in series arrangement automatically adjust to all loads.
- **ADAPTABLE FOR PASSENGER EXPRESS SERVICE** by providing lock center pin and safety straps.
- **LONG JOURNAL BEARING LIFE**
- **LOW RATIO** rail shock transmission to car body.
- **LATERAL SHOCKS** limited and controlled.
- **QUICK WHEEL CHANGE** — not necessary to remove springs.
- **EASY RIDING**
- **SAFETY LOOPS AND STRAPS** provided for bottom bearings and swing hangers.
- **WEAR PLATES** for close clearance and wear take-up.
- **NON-HARMONIC** without use of snubbers or frictional elements.
- **RUGGED AND SIMPLE DESIGN**
- **MEETS A.A.R. REQUIREMENTS** for high speed freight and passenger service.
- **TESTED . . . PROVED** by five years of daily freight and passenger head end service with excellent results.

McCONWAY & TORLEY CORPORATION

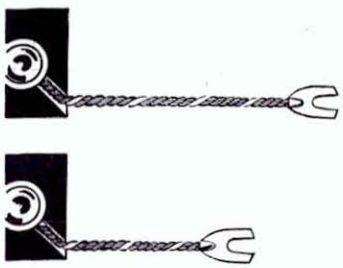
109 - 48th STREET, PITTSBURGH, PA.

Chicago **St. Louis** **San Francisco**

To Reduce carbon brush inventory with "National" brushes!

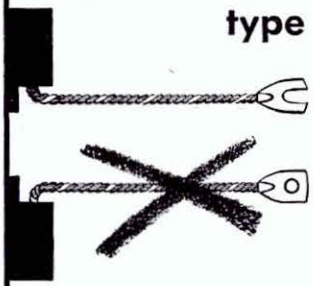
The lack of standardized specifications has always been the bugaboo of carbon brush applications. Here are ways to simplify these specifications and reduce your inventory.

1. Use only two shunt lengths.



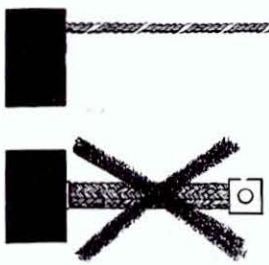
Why specify so many different shunt lengths for identical brushes used on different types of motors and generators? Experience shows that only two shunt lengths—3½ and 5½ inches—are necessary.

2. Substitute slot- for hole-type terminals.



Slot-type terminals are easier to attach to terminal screw. Standardize on the slot-type and you further reduce brush inventories.

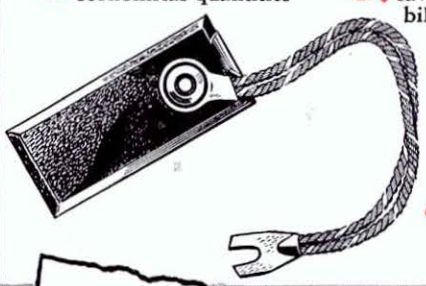
3. Use stranded instead of braided cable.



Stranded cable is suitable for any type connection. Braided cable is not suitable for Q-type connections. By standardizing on stranded cable, you gain further inventory reduction.

HOW BRUSH STANDARDIZATION PAYS_

1. Permits buying in economical quantities
2. Fewer small orders—with savings in bookkeeping, billing, and accounting
3. Less money and space tied up in brush stocks
4. Less time needed to handle stock



Why carry hundreds of special carbon brush sizes and types when a few standard brushes will do the job as well?

The term "National" is a registered trade-mark of

NATIONAL CARBON COMPANY, INC.

Unit of Union Carbide and Carbon Corporation

UCC

30 East 42nd Street, New York 17, N. Y.

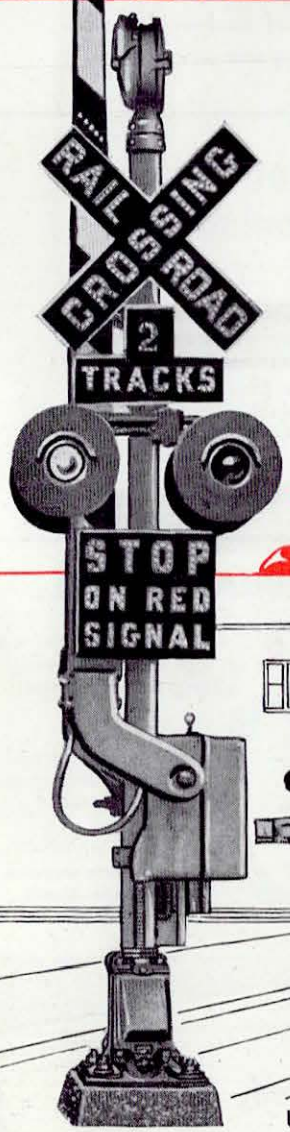
Division Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

STEEL SCRAP IS URGENTLY NEEDED. BE SURE TO TURN YOURS IN!

THERE MUST BE A REASON NEARLY **100** RAILROADS HAVE INSTALLED

Model 10

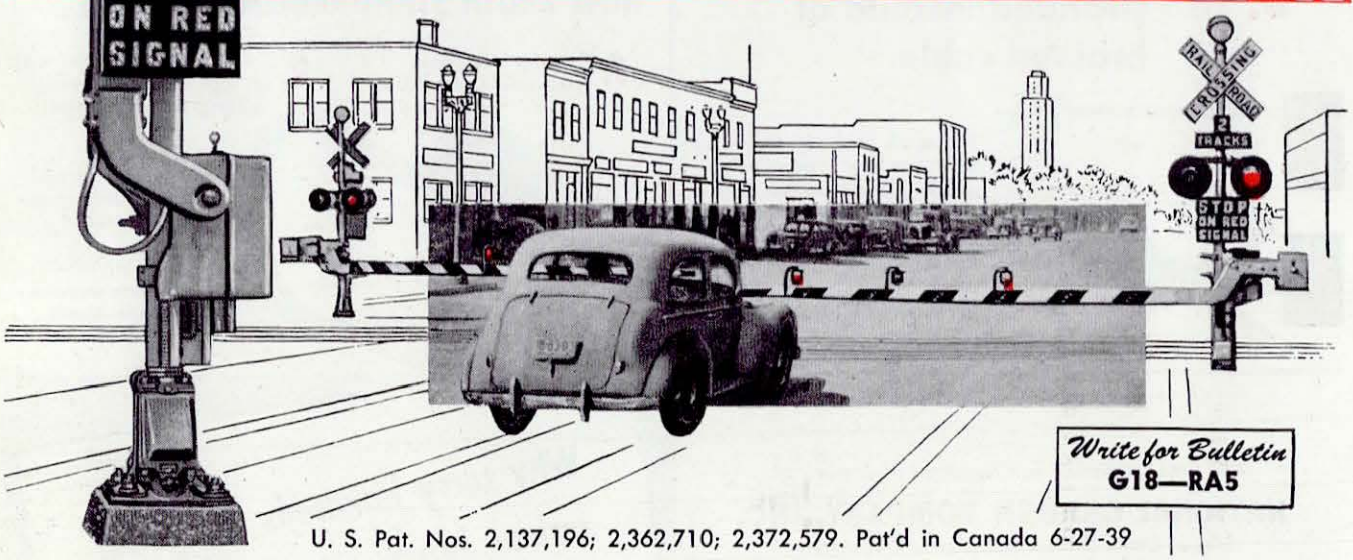
RAILROAD-HIGHWAY CROSSING SIGNALS



Model 10 Signals are the most thoroughly dependable grade crossing protection it is possible to buy. During their eleven years of service, Model 10's have proved their efficiency, establishing perfect performance records at thousands of railroad-highway crossings throughout the world. Since the first Model 10's were installed in June, 1936, NOT ONE FATALITY has ever occurred as the result of operation failure on the part of Model 10's. In recognition of their contribution to public safety, Model 10 Signals have been awarded the Certificate of Merit by the New York Museum of Science and Industry.

Model 10 Signals

- **Operate automatically — as dependably as semaphore signals.**
- **Safeguard against "second train" accidents.**
- **Permit the fast flow of rail and highway traffic.**



Write for Bulletin **G18—RA5**

U. S. Pat. Nos. 2,137,196; 2,362,710; 2,372,579. Pat'd in Canada 6-27-39

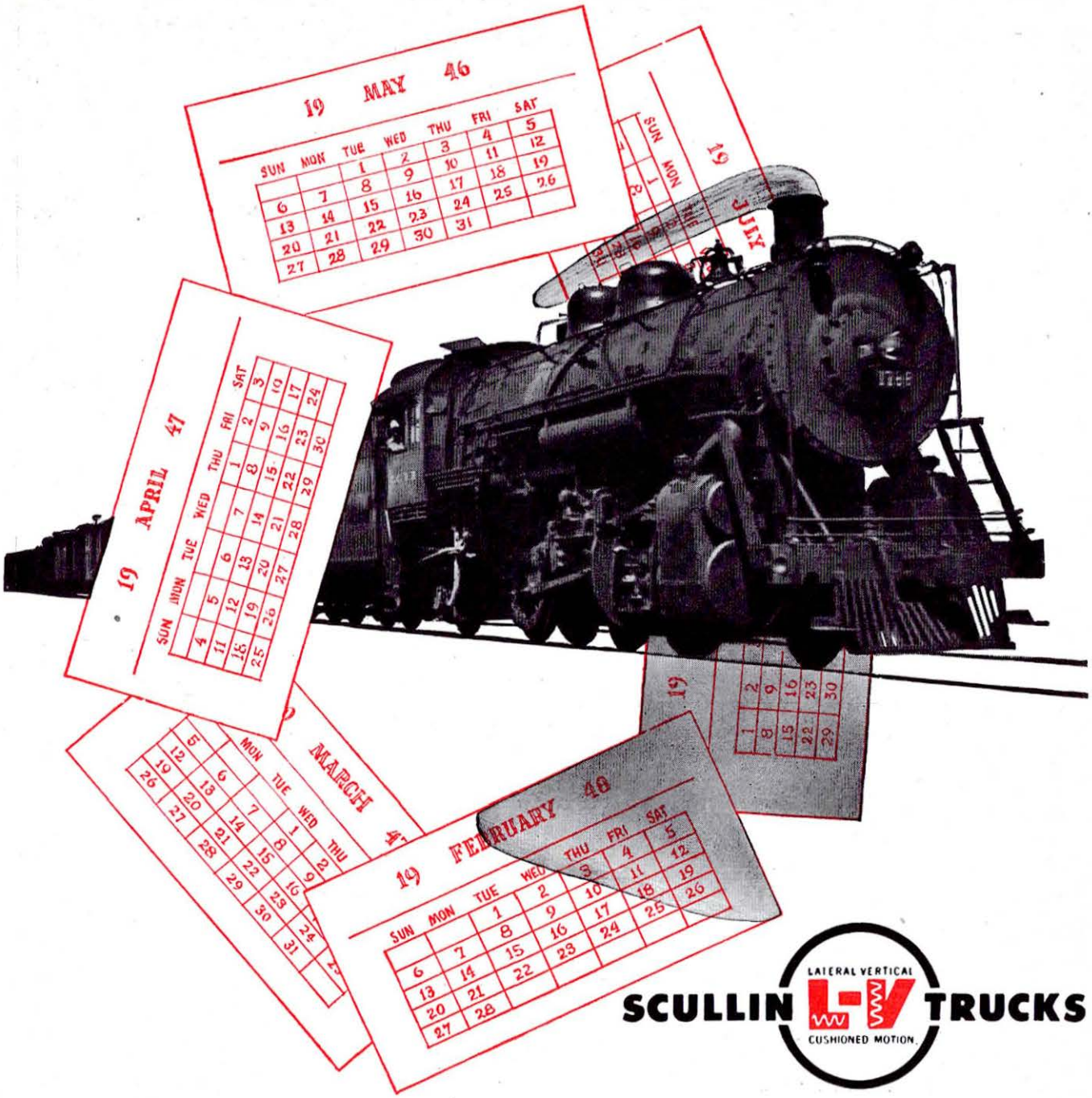
MODEL 10 HIGHWAY CROSSING SIGNALS ARE THE PRODUCT OF

WESTERN RAILROAD SUPPLY CO.

Designer and Manufacturer of Safety Devices for Railroads

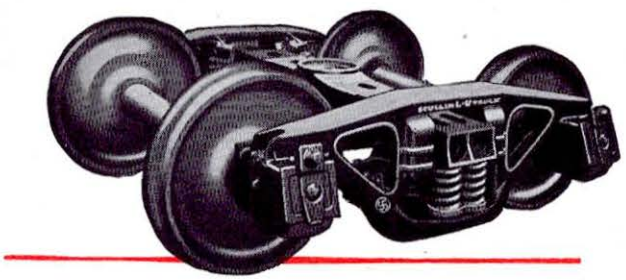
2406-2436 SOUTH ASHLAND AVE.
CHICAGO 8, ILL.

Foreign Representatives
GUITERMAN COMPANY, INC., 35 SOUTH WILLIAM ST., NEW YORK 4, N. Y. and LONDON
•
INTERNATIONAL STANDARD ELECTRIC CORP., 67 BROAD ST., NEW YORK 4, N. Y.



LATERAL VERTICAL
CUSHIONED MOTION

SCULLIN L-V TRUCKS



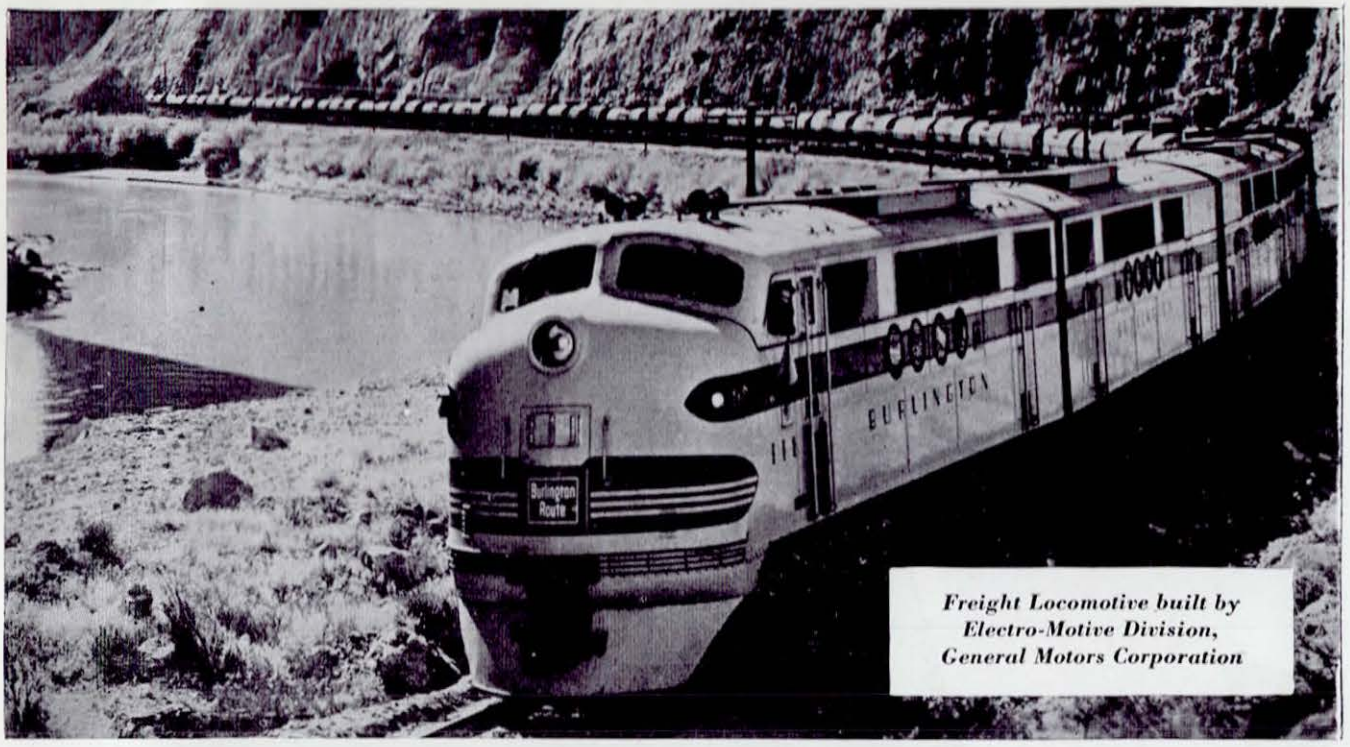
SMOOTHER RIDING
month after month

Both lateral and vertical motion are completely cushioned...destructive bounce and sidesway ended...by one simple device that needs no maintenance.

STEEL CASTING MANUFACTURERS SINCE 1899

SCULLIN STEEL CO.
SAINT LOUIS 10, MISSOURI

NEW YORK • CHICAGO • CLEVELAND • BALTIMORE • RICHMOND, VA. • MEXICO CITY, D. F.



Freight Locomotive built by Electro-Motive Division, General Motors Corporation

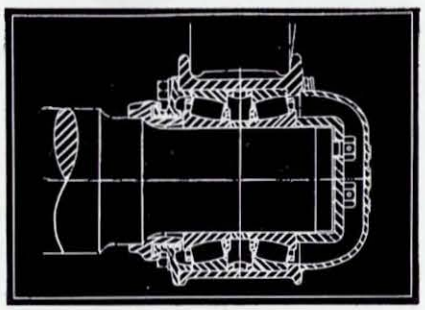
They Sure Move Freight!

Diesel Locomotives have contributed greatly to the progress made by American Railroads in swift, economical, freight movement. Hyatt roller bearing journal boxes and traction motor bearings have been active partners in this development.

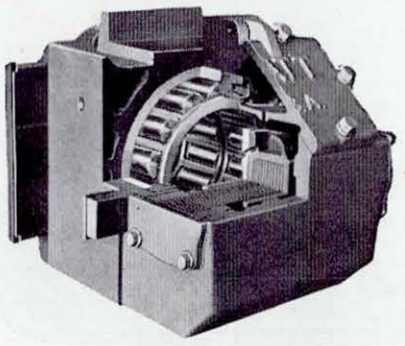
There is a very definite trend toward the more widespread use of modern roller bearing freight cars that can be freely interchanged among all carrier systems.

Hyatt developments in the freight car field over the past twenty years will be just as enthusiastically received as our present series of locomotive and passenger car journal boxes.

Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.



Hyatt Freight Car Journal Box



Hyatt Electro-Motive Locomotive Journal Box

HYATT ROLLER BEARING JOURNAL BOXES

Vol. 124, No. 20 May 15, 1948

RAILWAY AGE

With which are incorporated the Railway Review, the Railway Gazette, and the Railway-Age Gazette. Name Registered in U. S. Patent Office.

FREIGHT PROGRESS ISSUE

GENERAL ARTICLES:

Shippers, Management and Labor Must Stand Together or Lose Freedom, by A. H. Schwietert 137
Heavy Traffic, High Costs, Hard Problems Mark Freight Service 138
Freight Service Survey Shows Many Improvements by Individual Roads 143
Mechanical Handling of Freight Widespread 152
Railroads Set to Handle Unit Loads 156
Class "A" Transportation Problem—Loss and Damage 160
How the Railroads Are Fighting Loss and Damage, by A. L. Green 162
S-T-R-E-T-C-H-I-N-G Cars 166
Why Push Return to Car Service Rules?, by Ralph E. Clark 167
Freight Car Supply Increasing 168
L.C.L.—"Hussy" of the Railroad Business 172
Truck Competition Stiffening Again 174
Freight in the Air 174
Freight Cars for Improved Service 176
Ubiquitous Railway Express Recovers Its Efficiency 179
Motive Power Use Is Undergoing Refinement 180
Signals Keep Shippers' Freight Moving 184
Improved Communications Keep 'Em Rolling 186
Emphasis on Freight Handling Facilities in Property Improvement Programs 188

EDITORIALS:

Collaboration Which Benefits Everybody 133
The Crisis in Loss and Damage 135
Freight Packing and Handling Revolutionized 135

GENERAL NEWS

..... 198

Published each Saturday by the Simmons-Boardman Publishing Corporation, Orange, Conn., with Editorial and Executive Offices at 30 Church Street, New York 7, N. Y., and 105 W. Adams Street, Chicago 3, Ill.

Washington 4, D. C.: 1081 National Press Building—Cleveland 13: Terminal Tower—Seattle 1: 1033 Henry Building—San Francisco 4: 300 Montgomery Street, Rooms 805-806—Los Angeles 14: 530 West 6th Street—Dallas 4: 2909 Maple Avenue.

Samuel O. Dunn, Chairman and President. James G. Lyne, Executive Vice-President. Roy V. Wright, Vice-President and Secretary. C. Miles Burpee, F. C. Koch, R. E. Thayer, H. E. McCandless, S. Wayne Hickey, H. H. Melville, C. W. Merriken, Vice-Presidents, J. T. DeMott, Treasurer. Ralph E. Westerman, Arthur J. McGinnis, Assistant Treasurers.

C. Miles Burpee, Business Manager.

Subscriptions including 52 regular weekly issues, and special daily editions published from time to time in New York or in places other than New York, payable in advance and postage free. United States, U. S. possessions and Canada: 1 year, $6.00; 2 years, $10.00; other countries not including daily editions: in Western Hemisphere 1 year $10.00; 2 years $16.00; other countries 1 year $15.00; 2 years $25.00. Single copies, 50 cents each, except special issues.

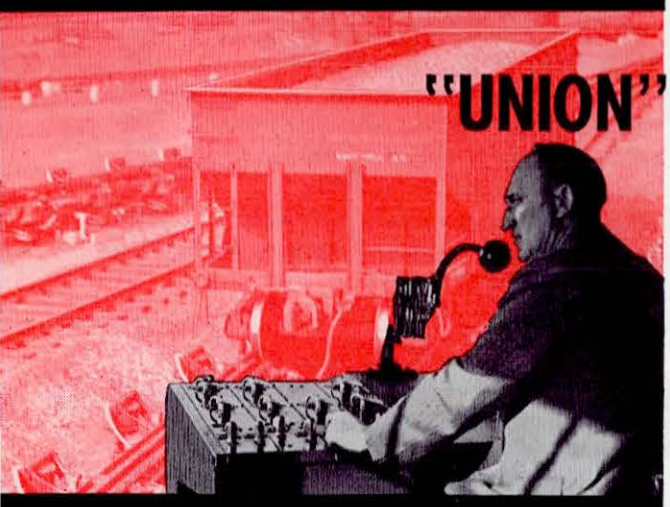
H. E. McCandless, Circulation Manager, 30 Church Street, New York 7.

Railway Age is a member of Associated Business Papers (A. B. P.) and Audit Bureau of Circulation (A. B. C.) and is indexed by the Industrial Arts Index and by the Engineering Index Service. PRINTED IN U.S.A.

Promoting FREIGHT PROGRESS

"UNION" C.T.C. "SAVES YOU MORE THAN IT COSTS"

Increases track capacity and expedites traffic . . . keeps freight moving by reducing delays at meeting and passing points. Saves tonnage trains more than a-minute-a-mile . . . assures better utilization of railway plant and personnel.



"UNION" CAR RETARDERS "SPEED THE JOB —CUT THE COST"

Eliminate unnecessary delays and congestion in freight classification yards and cut classification time as much as one-third. Classification costs show an average saving of 25¢ per car, returning an average of 42% on investment.

"UNION" I.T.C. "THE VOICE OF EXPERIENCE IN TRAIN COMMUNICATION"

Saves time in the yard and on the road by providing clear and instant voice communication facilities for enginemen, conductors, and wayside operators. As easy to use as your office telephone, I.T.C. coordinates and speeds operations . . . increases efficiency.

Let our engineers show you how these "Union" timesaving systems can promote freight progress on your railroad.

UNION SWITCH & SIGNAL COMPANY

SWISSVALE PENNSYLVANIA

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

FREIGHT PROGRESS AT A GLANCE

MISSING ELEMENT: To assure the most efficient operation of the railroads, and to perpetuate their success under private enterprise, there must be cooperation between railroad management, railroad labor, and the railroads' customers. This is the observation with which A. H. Schwietert, president of the N.I.T. League, introduces his objective and logical statement for this Freight Progress Issue of the shippers' view of the railroad situation (page 137)—and it is not likely that many informed persons will disagree with him. Most of our pages this week are devoted to a summary of the railroads' progress during the past year (not wholly unmarked by disappointments) in improving their capacity to provide efficient and economical transportation service—progress that has been possible only through the invaluable cooperation of the shippers. But the situation here reviewed bears too close a resemblance to a two-legged stool, in that very little progress can be recorded in securing the alliance of leaders of railroad labor in this cooperative undertaking. In fact, the year since last mid-May closed with the nation's trade and productivity and the fortunes and welfare of its citizens in jeopardy because there are arrogant autocrats in control of brotherhood policies who place their own immediate advantage ahead of the prosperity and progress of the industry that provides employment for the members of those unions.

CRISIS AVERTED: The catastrophe that would have followed any extensive halt in railroad operations has been escaped by a narrow margin, thanks to the fact that it is still possible, legally, to say that this country is at war. In another sense it *is* at war, definitely, because peace does not prevail in the relations between labor organizations and management, on the railroads and in numerous other industries. Our leading editorial observes that situations like that precipitated this week by the hold-out op leaders just cannot be tolerated. The country will not stand for their periodic repetition, and if it would the railroads could not continue to function very long under private ownership, in competition with rival means of transportation to which traffic would be diverted because of such interruptions to railroad service. The intelligent interest of shippers is an important and indispensable factor in the formula for producing those conditions of peaceful and profitable operation essential to the prosperous survival of the railroads as private industry.

CAR SUPPLY TURNS THE CORNER: Although the tightness of the freight car supply has been the inspiration for what one of this issue's feature articles calls a "magnificent job of car utilization" (page 168), the oft-heralded goal of 10,000 new cars monthly has been approached but never reached. Perhaps the sights were set too low. If the aim is raised to 12,000 or so per month—and there was talk in Washington fairly recently of a 14,000-car goal—and if steel is made available in balanced car-lots to make its achievement possible, then there would be good ground for expecting at least a prompter alleviation of the shortage. Meanwhile there is a note of encouragement in the fact that in recent months new car installations are running ahead of retirements. As a temporary slackening in shipments at the same time helps to ease the stringency, Car Service Rules, necessarily more or less by-passed during the period of critical shortages, again are being applied. Ralph E. Clark of the Car Service Division outlines the effect of these rules in one of this issue's articles.

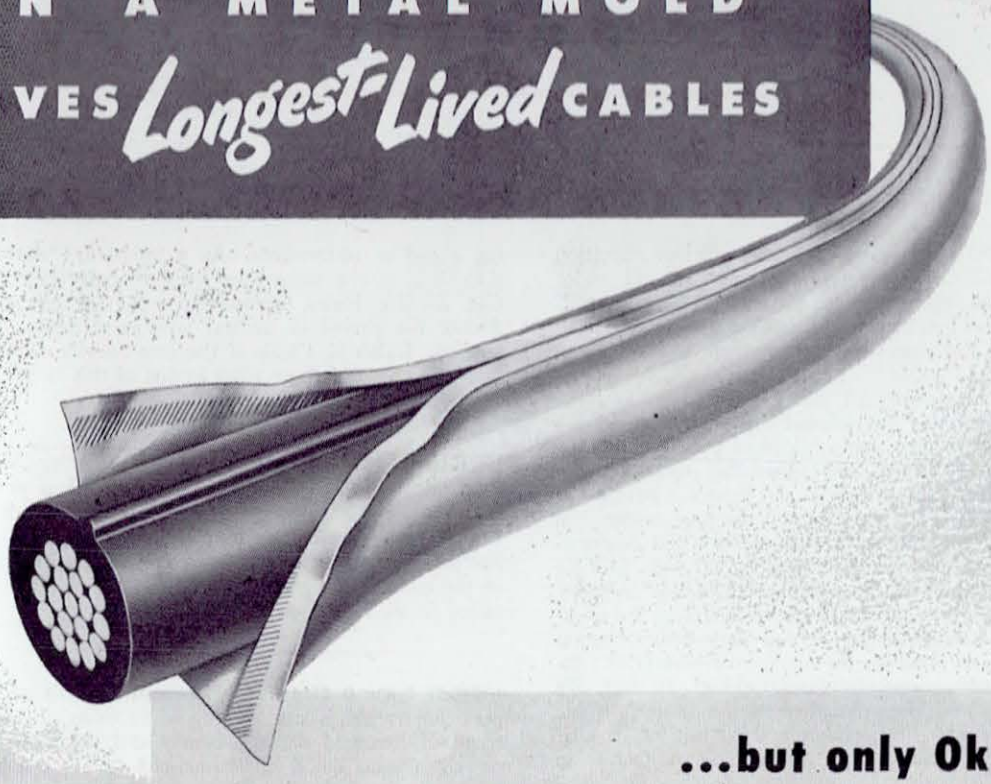
HANDLING FREIGHT MECHANICALLY: Speedier and more economical handling of freight, with less loss or damage, through the use of mechanical equipment and devices, is a goal toward which railroads are moving with marked success. The experiences of several roads and a review of the most recent practices and recommendations are detailed in an article on page 152.

HISTORY SHOULD REPEAT. Devices and methods which shippers and railroads are employing to reverse the upward trend of loss and damage claims and payments are discussed in some detail in two articles herein, one being by A. L. Green of the A.A.R. Freight Claim Division. Our editorial comment on the same subject points out that for a parallel with the present poor record in this respect it is only necessary to turn to the post-World War I era. By extraordinary efforts the deplorably high loss ratio of that period soon was whittled down to more reasonable levels, and the means are at hand to do as well again.

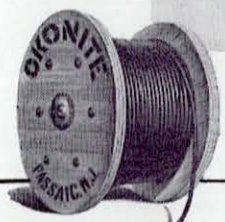
SUBSTANTIAL GAIN: There have been car shortages in the past year, and delays to freight in congested terminals, and abnormally high damage to lading. These are conditions the railroads want to do something about, and there is abundant evidence in this issue that they are doing something about them. But there is a substantial record of progress to report, too, and the article on page 143 picks out some highlights, road by road, marking these advances in the provision of better transportation.

MANY CONTRIBUTE—MANY BENEFIT: So far as the shipper is concerned, progress in freight transportation is measured first in terms of greater efficiency, speed, reliability and safety of freight train operation. For the railroads to produce such improved performance, however, it is necessary for them to coordinate advances made in many different segments of their organizations. Articles in this issue outline recent contributions by these departments to the enlargement of the railroads' capacity to create better transportation. Late developments are reported in refinements in track and structures, signals and communications, handling l.c.l. shipments, motive power, devices for loading and transporting small packages safely, speeding turn-around of cars, and in operating practices and scheduling of trains. These advances, and others that will follow as means and materials are available, add up to better service for shippers and greater efficiency for the railroads.

VULCANIZING IN A METAL MOLD GIVES *Longest-Lived* CABLES



...but only Okonite uses this process as standard practice



with today's installation costs* only the *Longest-Lived* will be economical

* The lifetime cost of a cable rather than its first cost is the only true measure. Okonite wires and cables, built to stand up better and longer, can offset high installation costs.

When Okonite insulated wires and cables are vulcanized, every foot that enters the huge pressure chamber receives uniform treatment. One reason is this:— on the reel or drum as it goes into the vulcanizer, the complete length of cable is compressed within a *continuous metal mold.* And this metal mold insures equal transfer of the heat throughout every portion of the insulation.

When the pure tin mold is peeled off after removing the cable from the chamber, the entire length has been simultaneously vulcanized at the same temperature and pressure. *The benefits that result include longer life, greater density and higher electrical values.*

Bulletin RA-101 describes and shows this operation and others — all based on Okonite's years of experience in making the longest-lived cable money can buy. Write to The Okonite Company, Passaic, N. J.

6511

OKONITE OKONITE SINCE 1878 **insulated wires and cables**

THE BEST CABLE IS YOUR BEST POLICY

RAILWAY AGE

EDITORS . . .
Samuel O. Dunn and James G. Lyne
MANAGING EDITOR . . .
Roy V. Wright
ASSISTANT MANAGING EDITOR . . .
C. B. Tavenner
WESTERN EDITOR . . .
Neal D. Howard
WASHINGTON OFFICE . . .
Walter J. Taft
Sherman Davis
TRANSPORTATION DEPARTMENT . . .
William H. Schmidt, Jr.
Robert G. Lewis
MECHANICAL DEPARTMENT . . .
C. B. Peck
E. L. Woodward
H. C. Wilcox
C. L. Combes
G. J. Weihofen
ENGINEERING DEPARTMENT . . .
M. H. Dick
Walter L. Turner, Jr.
Henry E. Michael
PURCHASES & STORES DEPARTMENT . . .
John W. Milliken
EQUIPMENT & FINANCIAL NEWS . . .
Fred C. Miles
SIGNALING AND COMMUNICATIONS DEPARTMENT . . .
John H. Dunn
Maurice Peacock
ELECTRICAL DEPARTMENT . . .
Alfred G. Oehler
WESTERN NEWS DEPARTMENT . . .
George R. Johnson
ASSOCIATE EDITOR . . .
Charles Layng
LIBRARIAN . . .
Edith C. Stone
EDITORIAL ASSISTANT . . .
Elaine C. Farrar

COLLABORATION WHICH BENEFITS EVERYBODY

"Dammit, when company comes, the best baby there ever was will always misbehave"—such was the comment a few years ago of a railroad officer who was showing off his modern hump yard to a group of visitors when a cut of cars went on the ground, fouling a lead track and putting a complete stop to all operations. A similar feeling is unavoidable when a discussion of freight service progress is interrupted by the current distracting labor crisis on the railroads.

The Reasonable Course

But such crises pass—they always have. Tempers cool, congestion is gradually cleared away, and progress resumes where it left off. To make this observation is not to dismiss these disputes with the unions lightly. Interruptions to railroad traffic—or threats of interruption—are intolerable, and that is the reason why they are not going to be permitted to recur year after year. Even if the public would stand indefinitely for being periodically inconvenienced at the whim of a few labor leaders, the logic of the railroads' own situation points to the impossibility that such work stoppages will ever become a settled feature of railroad operation.

It is like this: These interruptions, and threats of interruption, are a perfect device for diverting railroad traffic to rival agencies of transportation, and no more than a limited amount of that can go on without socialization of the railroads becoming necessary, in order to procure for them the funds to keep them functioning. If that should happen, strikes would soon become a thing of the past, because government does not tolerate strikes by its own employees.

Ending railway labor troubles by socialization of the industry would, of course, be a cure worse than the disease itself—like cutting off a man's head to cure his headache. The reasonable course is to effect recovery by more gentle means. Such means are readily available for remedying union troubles on the railroads—not the extension of complicated regulation to the unions, but simply the removal of some of the arbitrary immunities now extended by statute permitting reckless labor leadership to practice monopoly with impunity.

Moving on from phases of the railroad scene which, because of their acuteness, are bound to be transitory—what do we see that is of primary significance to the industry's principal customers, the shippers and receivers of freight? There are at least two developments of transcendent importance in which, while they are not new, great progress was registered during the past twelve months. They are:

1. The unprecedented magnitude to which the railroads have increased their capital expenditures

in their effort to improve the quality and dependability of their service.

2. The continuing intelligent interest of leading representatives of the shippers in the welfare of the railroad industry, their willingness to accept reasonable increases in rates, and their efforts to provide a political framework which will enable the railroads to function profitably and thus regain the confidence of investors, which is prerequisite to continuing improvement of railroad service, under private ownership.

To consider these two developments in order—in the matter of capital expenditures for improved service, recent estimates published by the Department of Commerce (and shown in chart form in the news pages of this issue) indicate that the railroads in 1948 are going to spend $1.6 billion for such improvements and that, by the last quarter of the current year, capital expenditures by the railways will be going on *at the annual rate* of $1.8 billion.

How really large these totals are will be seen by a few comparisons. In 1947 the railways' capital expenditures were $970 million—a figure which this year's total promises to exceed by 75 per cent. In all past history the largest total capital expenditures ever attained was slightly more than $1 billion, in 1923. In prosperous 1929 the total was a relatively modest $854 million. It fell as low as $104 million at the bottom of the depression in 1933 and was only $543 million in so comparatively active a year as 1941.

The Customers' Stake

The significance of such figures as these to the railroads' customers is that the industry is demonstrating its determination to spend as much money as it can lay its hands on to bring its service up to the standards of adequacy and dependability which are required in the interest of the nation's economy and for its military defense. The corollary observation must be made that current railroad earnings will not long sustain expenditures at any such level as the present one.

The railroads' customers have, of course, the liveliest self-interest in seeing the present high level of expenditures continued until railroad service is thoroughly adequate and modern in every respect.

The attainment of this goal does not just require the maintenance of railroad earnings at an attractive level (better, for example, than the less-than-one-billion estimate of net railway operating income which current rates promise to yield in 1948)—it also needs a change to a more hopeful attitude toward the industry on the part of people and institutions with money to invest. It isn't just the relatively favorable earnings for a few years which these investors are looking for, but an optimistic opinion on what the industry is going to be earning ten years from now.

And here is where point No. 2 above—*the continuing intelligent interest of leading representatives of the shippers in the welfare of the railroads*—comes in. By their activity in furthering the measures necessary to the prosperous survival of the railroads as private industry in respect to their competition, which is predominantly socialistic (i.e., superhighways, improved inland waterways, and government-financed airports), the shipping fraternity affords the main hope that, eventually, confidence in the railroad industry is going to revive. When that happens, the shippers can quit worrying about the adequacy and dependability of railroad service—because experience demonstrates nothing more clearly than that, when the railroads can get the money to spend for service improvements, they will spend it.

Much Achieved—More in Preparation

There is no better example anywhere of shipper statesmanship and enlightened self-interest than the article which A. H. Schwietert, president of the National Industrial Traffic League, has written for this Freight Progress Issue. The article is by no means mere flattery—where he sees something to criticize, he does not hesitate to speak frankly. But "faithful are the wounds of a friend," and he says nothing which it would not profit railroad men to read and to practice. There are hundreds of other prominent and devoted professional transportation men among the buyers of railroad service whose public-spirited intelligence is of an order comparable to that evidenced by the head of the N.I.T. League. When the numbers of such transportation statesmen increase into the thousands, then the external circumstances which hamper the railroads from providing the kind of service they want to provide will disappear.

No other one thing would do so much to strengthen private enterprise in transportation as a thoroughgoing pillorying of the advocates of transport socialization—forcing them to abandon either their socialism or the pretense that they are friends of private enterprise.

In the face of continuing difficulties which are a legacy from the depressed Thirties, the railroads in the past year made definite progress—which is recorded in detail in these pages—in reducing the shortage of transportation and in improving its quality. There is more of the same in preparation, and it will move steadily forward to fruition if the railroads and their customers continue to maintain and to strengthen the mutually profitable liaison which is the formula for producing miracles if ever there was one.

THE CRISIS IN LOSS AND DAMAGE

Like the ways of chastity and temperance, the attainment of transportation without loss and damage is an unglamorous activity. The fight against waste is, in the broadest sense, a constant repetition of basic principles, to the point of dullness. Although everybody in the transaction loses from damaged and astray goods, the struggle for their reduction lacks the heated sport of making a sale, fulfilling a contract, or making a good profit. In these respects, the field of loss and damage reduction is like that of safety—a never-ending, repetitious drive, with the reward to the participant being the retention of something he already has, which, however valuable, is never quite so tempting as something added to the *status quo* would be.

But there come periods of crisis when the record becomes so bad that all parties concerned agree that an extraordinary effort must be made, lest they be overwhelmed.

Such a time is at hand with respect to freight loss and damage. Despite the fact that the war has been over mor almost three years, the tell-tale ratio of loss and damage to revenues of the railroads is running at a rate exceeded only in the years 1919 to 1922, inclusive.

Because they realized that a crisis was at hand and because they took yeoman steps to deal with it, the railroads and their customers were able to fight down the loss ratio from a high of 2.95 in 1919 to an average of 0.75 within a few years. Now, still suffering from the aftermath of World War II, the shipping fraternity is faced with a crisis of equal magnitude and, therefore, the need for equally vigorous measures.

While, as stated, the chief weapons against loss and damage lie in time-tested precepts of good shipping practice, there have come into being tools with which to carry out these precepts in new ways. In the physical realm, advancing technology provides a new scientific approach to packaging problems, in which the engineer studies the container in relation to the specific product for which it is to be used, having in mind not only handling conditions at destination but during its transportation as well.

Important technical advances in platform machinery and other physical facilities for handling loads as units and methods of reducing the shock of transportation—such as "the floating load" strapped method of stowing freight cars, bulkheading and separation devices, and easier-riding cars—lend strong support to loss and damage reduction. Future opportunities in this direction are unlimited.

But whatever the campaign and the tools, the job can never be done unless the importance of reducing loss can be made clear to "the man who actually damages the freight," to quote one shipper. "It is of no use for management and supervision merely to talk up prevention among themselves; *they* don't handle the freight." They must take off their coats, roll up their sleeves and show "the man pushing the freight" how to do it.

FREIGHT PACKING AND HANDLING REVOLUTIONIZED

In 1906 the Pennsylvania mounted an electric motor on a baggage wagon; thus was born the first industrial truck, which has had such a profound effect in improving the handling of freight shipments both by railroads and shippers. As the use of the industrial truck has grown, the hand truck has either disappeared or taken on a "new look"—with rubber tires, roller bearings and special designs for specific purposes.

Mechanization on freighthouse floors early took the form of the tractor-trailer train, with an aim to eliminate manual handling and speed up operations. During World War II the self-loading truck came into greater use, in the endeavor to offset the acute manpower shortage. Today such trucks are in common use and their advantages are enhanced by the application of the "unit load" principle. (A unit load includes a number of man-size loads, put together in such a way as to be handled mechanically as a unit.) Not only are the costs greatly reduced by such handling, but substantial savings are made in loss and damage to freight. Pallets and palletized containers are no longer a novelty in freighthouses.

While developments in freight handling have shown marked progress, parallel advances have been made in the packing and packaging fields. The work of the Freight Loading and Container Section and the Freight Claim Division of the Association of American Railroads, with the cooperation of shippers and organizations such as the Shipping Container Institute and the Gummed Industries Association, has proved most fruitful. The direction in which much of their endeavors now seems to be leading is toward a wider adoption of the unit load principle.

The burden of loss and damage can be lifted only with the continued cooperation of the railroads and the shippers, and only if both assume that each type of article shipped is a separate problem in itself, to be studied both before and after shipment.

Money saved for the shipper in handling freight before and after its ride on the railroad is just as much a boon as reduced freight rates, and might hold traffic on the rails which, otherwise, the rate level would drive away.

GREAT NORTHERN
GREAT NOR
RAILWAY

Improved railroad service, facilities, earnings required; labor must interest itself, too, in better transportation performance if it is to retain jobs; dishing out subsidies will bring surplus of transport

SHIPPERS, MANAGEMENT AND LABOR MUST STAND TOGETHER OR LOSE FREEDOM OF ENTERPRISE

By A. H. SCHWIETERT
President, National Industrial Traffic League

The Author

Labor must join in the cooperative relationship between railroad management and shippers if efficient operation is to be attained and private enterprise in transportation preserved. Present unfavorable conditions are the cumulative result of almost two decades of economic dislocation, relieved during only a brief intervening period by conditions which might be regarded as normal. Since 1930, depression, competition, war and inflation have had a serious effect upon the nation's railroads.

Our transportation facilities are the foundation of the whole complex structure of our highly industrialized economy. It follows that any failure of transportation to function properly causes an unfavorable reaction throughout the entire structure of business and industry and operates against the public welfare. Despite the unhappy experience with government operation of the railroads during and immediately after World War I, any serious breakdown under the present system of private enterprise would arm those who would unthinkingly advocate socialization of transport. On this point it would be well to consider the following observation made by the Interstate Commerce Commission in its annual report for 1947:

"The United States remains the only major nation wholly dedicated to the maintenance of private enterprise in the conduct of transportation. Problems of postwar adjustment in the transportation field necessarily assume more varied and complex forms here than in countries which follow other principles and administrative practices. These perplexing problems are inherent in the preservation of the institution of private conduct of transportation, which the country cherishes as consonant with the general character of our institutions, as well as for the superior and more varied services provided."

The institution of private enterprise in transportation is secure only so long as it functions effectively. And this is the direct responsibility of labor, management and the users of transportation.

Short and Long Aims

An objective appraisal of conditions in transportation logically divides itself into two phases; first, a consideration of the pressing problems of the moment, and second, a contemplation of long-term trends, plans and policies. The factors contributing to present general conditions are many, complex and variable. This article will undertake to discuss in somewhat general terms—largely from the viewpoint of shippers—some of these problems, and will make suggestions which, it is hoped, will contribute to the general cooperative effort required to promote adequacy, efficiency and economy in transportation under private ownership and operation.

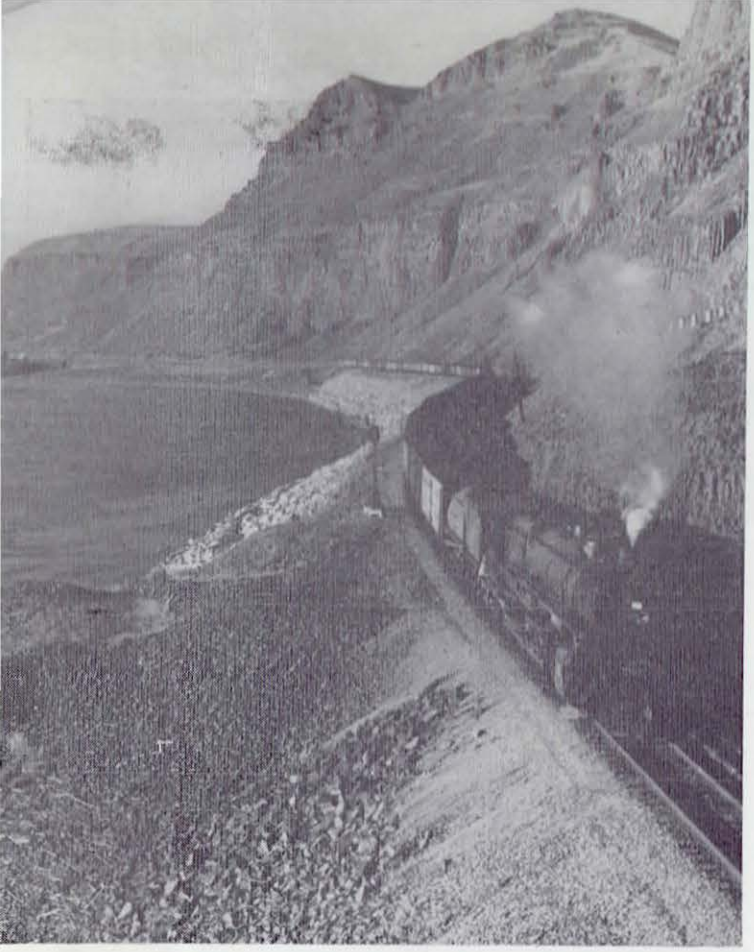
With the onset of World War II, grave doubts were expressed in some quarters as to the ability of the rail carriers to meet the needs of commerce and the national defense. Even the I.C.C. expressed concern in this respect. However, military and commercial traffic was handled without serious delay throughout the entire period of the war and this outstanding performance met with well-deserved public approval. At the end of the war favorable public opinion of railroad transportation was at its height.

Now, however, service is inadequate, slow and irregular, while freight rates are at the highest level in history. The present situation is less favorable than that prevailing during the war. Basic causes, of course,

(*Continued on page* 195)

[Editor's Note: It is a great privilege to present this outstanding expression of transportation statesmanship. Here is no convenient avoidance of important controversial issues. Management's faults, labor's failures, the evil effects of government subsidy and the need for remedial legislation are all faced frankly with outstanding clarity and logic.

Naturally, the author is expressing his personal views—not those of the distinguished body of shippers he heads—but it is all to the good that the policy-making of the league is subject, at least, to such guiding influence. It is significant also that Mr. Schwietert's "bread and butter" job is that of traffic director for the Chicago Association of Commerce and Industry, which fights jealously to keep Chicago the world's greatest railroad center.]

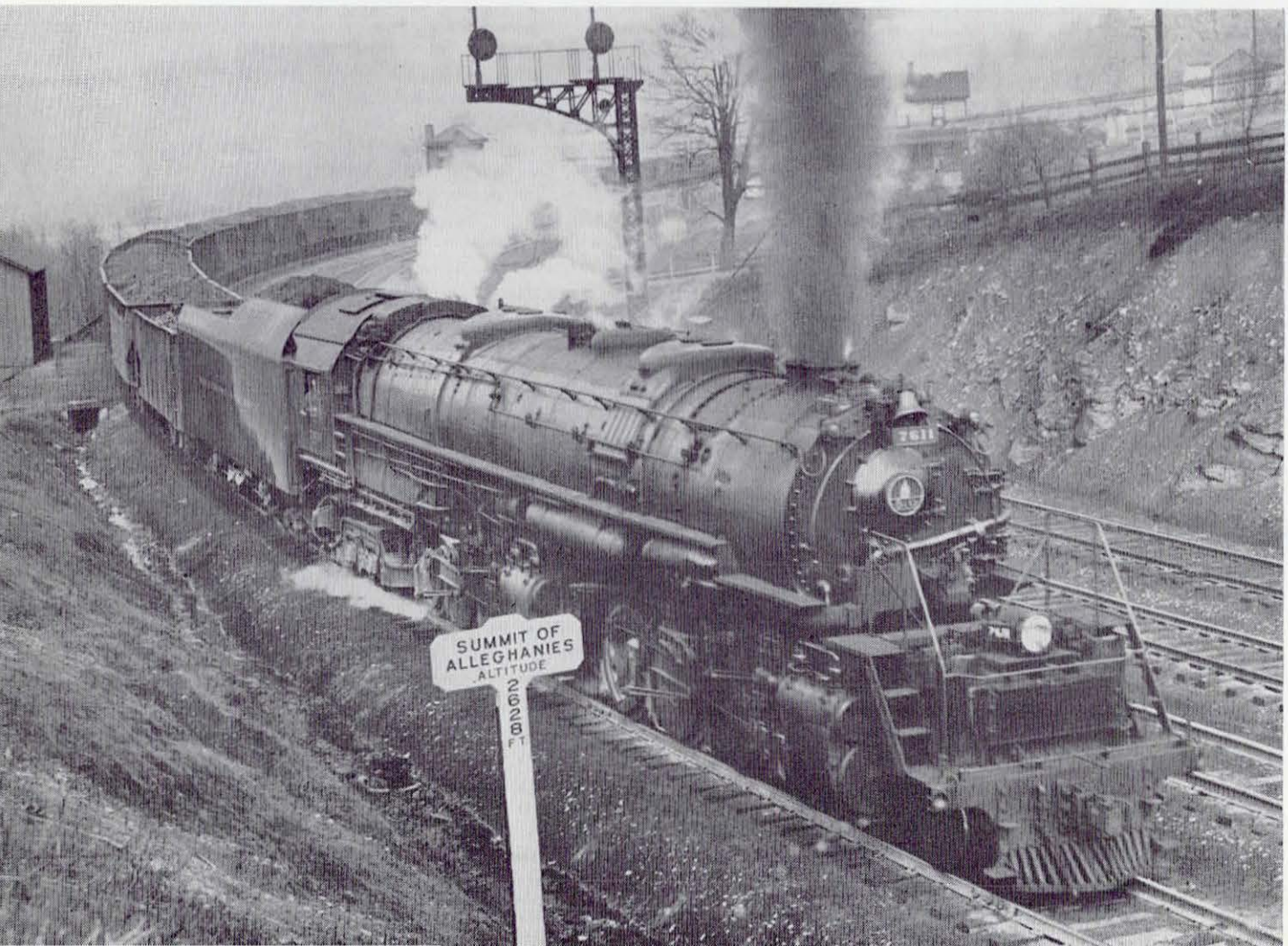


Above—The railroads increased virtually all basic indices of transportation efficiency to peacetime peaks—in some cases to all-time highs. Below—The tonnage of coal (the railroads' most important commodity) reached the highest figure in history in 1947

HEAVY TRAFFIC, HIGH COSTS,

The past 12 months brought to the railroads a high-level volume of traffic—in terms of tons carried, cars loaded and ton-miles—which would have been even higher had car shortages, strikes, bad weather and uncertainty not killed a substantial amount of tonnage, especially last winter. Although some of this record traffic was accorded service which was far from satisfactory to either the railroads or their customers, the important fact is that it *was* carried, and with less rolling stock than has been available during any previous periods of heavy traffic. Furthermore, this load was moved with unprecedented efficiency when measured by indices showing effective use of existing facilities, as the accompanying table (for 1947) indicates.

It is unfortunate that "galloping inflation" of labor and material costs and partially offsetting increases in rates tend to obscure the very real improvement the railroads are making in their basic efficiency. Their customers may well say, "How can you boast of cutting costs — by improving your method of doing business and handling a larger volume with less wherewithal—when your rates have jumped and you yourself complain that high costs threaten to drive you to the wall?" To this superficially sound observation the railroads must reply that improved efficiency is the sole reason



HARD PROBLEMS MARK FREIGHT SERVICE

Greatest peacetime year in traffic units brings stubborn cost boosts; near-record loss and damage; some ease in car shortage; new devices and methods

why their end-product costs have not gone even higher; why it has been possible to keep rate increases far below increases in the unit cost of rendering transportation service.

Lots of Freight Moving

The year 1947 (the latest 12-month period for which complete statistics are available) saw the greatest number of freight car loadings of any year since 1930—44,503,349 cars. The week ended October 11 produced the greatest weekly carloadings total since the peak week of 1930 and did it with 544,000 fewer freight cars. Revenue ton-miles—the best measurement of the railroads' retail product—were 10 per cent greater in 1947 than in 1946, and exceeded the record of any peacetime year in history. Despite loss of the greater portion of their short-haul traffic, the railroads still carried more tons of freight (regardless of distance) in 1947 than in any year in history, except the war years 1943 and 1944, the tonnage being 10 per cent over 1946.

All-time highs were recorded also in a number of important individual commodities. Coal tonnage was the greatest in history, exceeding the previous record of 1926 by one million tons, although the job was done with 146,000 fewer open-tops available, and carloads of coal were greater than any year since 1929, being 13.5 per cent over 1946. The tonnage of coal exported was by far the largest in history, being double the 1946 movement. Grain exports were the largest ever. Indeed, the number of carloads dumped at the ports was only slightly below the total so dumped for the entire six-year period 1939 to 1944, inclusive. Sugar beets moved in greater volume than in any previous year.

Had it not been for the sharp decline in grain and grain products loadings during the last three weeks in December (due to tax and price uncertainties), the railroads would have set another all-time record. This outstanding performance of the railroads was praised publicly by Director J. Monroe Johnson of the Office of Defense Transportation and by Governor Frank Carlson of Kansas. It was achieved in the face of a continued narrowing of the harvest season by use of the modern combine, so that the load is dumped upon the carriers in the space of a few short weeks.

The decline in grain loadings which began in December and has continued up to the present has been disappointing to the roads in the growing territory, which have had cars standing idle at country elevators, hoping to get the grain into terminals before the new harvest. The farmers and grain men are acting in their own interest by waiting for price stabilization, but the effect, nevertheless, will be to strain the box car supply later this year.

Some Recession in 1948

The first part of 1948 brought some decreases in traffic. Carloadings in January were down 4.5 per cent under the same month of 1947; in February down 3.6 per cent; and in March down 11 per cent. Heaviest decreases were in coal, grain, livestock, forest products and merchandise traffic. But the consensus is that these traffic slumps were due to abnormal factors; that much of the traffic was only suspended temporarily and will move shortly; and that tonnage will bounce back at least to the 1947 level—if it does not exceed it. The extent of the decreases was in close correspondence with the severity of the temporary factors. It is significant that carloadings for the week ended April 20 constituted an increase of 15 per cent over loadings of the preceding week.

The usually accurate 13 regional advisory boards estimated an increase of 3.5 per cent in carloadings during the first quarter of this year. This estimate was based, as always, on the probable trend of production and sales—not on outside catastrophes. Since carloadings dropped about 6.5 per cent during the first quarter, instead of increasing 3.5 per cent, there remains to be made up at least a portion of an anticipated

INDICES OF RAILROAD FREIGHT OPERATION—1947

No. Cars per Freight Train	52.9—Highest year in history except 1944	2% over 1946
Car-Miles per Car-Day	45.7—Highest peacetime year	8% over 1946
Net Tons per Loaded Car	32.6—Highest peacetime year	4% over 1946
Gross Ton-Miles per Train-Hour	38,462—Highest year in history	4% over 1946
Net Ton-Miles per Train-Hour	18,126—Highest year in history	5.5% over 1946

"It would be idle to attempt to argue that there are not cases of slow movement, with instances available to many shippers who check the transit time of their shipments, and to any railroad or Car Service Division representative who will check the records. On the whole, however, while these instances of slow movement indicate 'slack' which should, and, it is hoped, may, be taken up . . . I cannot believe that the railroads and shippers, working together, could have set up the record of transportation which has been made in 1947 if such slow handling was at all general. It must be the exception that proves the rule. The record of turn-around time [12½ days in October, 1947] is offered as evidence of this fact."

—Warren C. Kendall, chairman, Car Service Division, A.A.R., before National Association of Shippers Advisory Boards

traffic volume equivalent to 10 per cent of the 1947 first quarter loadings. For the second quarter of 1948 the advisory boards have estimated another 3.5 per cent increase over the corresponding 1947 loadings, which were themselves of record proportions. The rest of 1948 is likely to be a busy period for the railroads.

Coal Strike Hits Roads

The most serious cause of the recent traffic decline was, of course, the coal strike, starting March 15 and ending, for the most part, on April 13. Some of the miners were still out in protest as this issue went to press, however, and continuity of mining for the rest of the year is by no means assured. This "work stoppage" caused a drop of 20 to 25 per cent in carloadings by reason of the near cessation of movement of coal, in addition to which it caused a further important decrease in the movement of other commodities due to closed plants and curtailed production.

To conserve the coal supply of the railroads themselves, the O.D.T. and Interstate Commerce Commission ordered cuts in train service which slowed up shipments seriously and caused congestion at some terminals. Specifically, from March 22 through April 13 the carriers had to cut coal-burning passenger service locomotive-miles by 25 per cent (O.D.T. General Order No. 69), and from March 30 to April 13 had to reduce the mileage of coal-burning locomotives in freight service by the same percentage (I.C.C. Service Order No. 811). These service cuts would have been raised to 50 per cent, effective April 15, if most of the miners had not returned to the pits by then. An important provision of the freight service order was that the movement of coal could not be counted in the base service in which the cut was made, so that the latter was not absorbed by the loss of coal traffic and everywhere affected traffic actually tendered for transport. The passenger-train service reduction adversely affected the movement of express.

Another traffic hindrance was severe winter weather. Unprecedented snowfalls and prolonged sub-zero temperatures in the Northeast tied up a large number of freight cars, which could neither be returned to other originating areas nor used for loadings in the Northeast. Operating conditions on some roads were worse than at any time in the past 30 years. In the New England area a prolonged truck strike further paralyzed short-haul movements and pick-up and delivery of merchandise, filling freighthouses to the bursting point, so that a partial embargo against freight destined to the area had to be imposed.

One important eastern road reported that absenteeism in the cold weather cut its locomotive and car maintenance forces; that low temperatures cut the train heating capacity of its passenger locomotives so that additional locomotives had to be assigned thereto; and that heavy snow temporarily immobilized some important yards, despite heavy expenditures for removal. Since the Northeast is the country's major consuming area, the tie-up of cars destined thereto adversely affected the car supply all over the country.

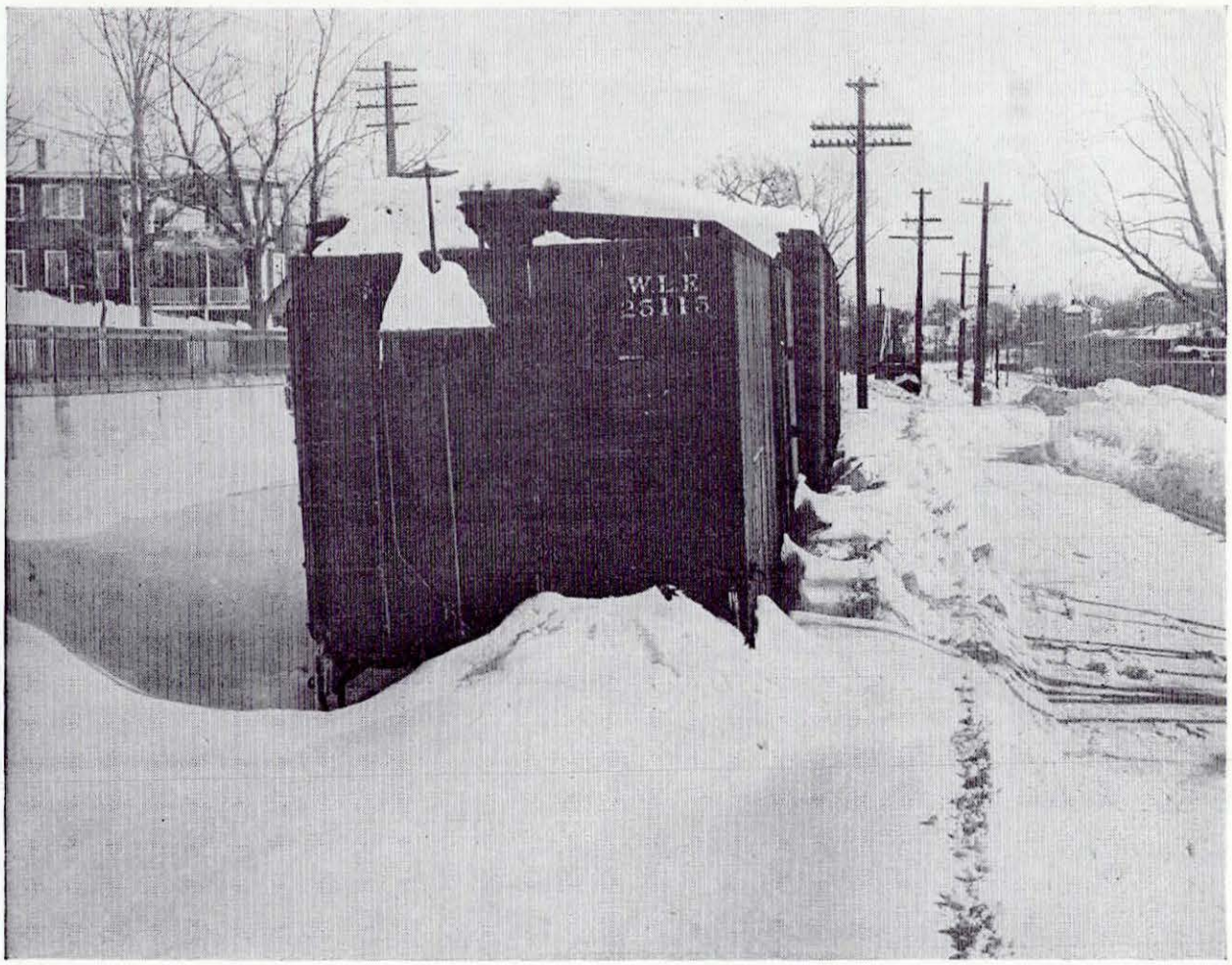
What of Freight Service?

Freight service exhibited no easily defined trend during the past 12 months. There was, for example, a notable improvement on some roads in transit time of "red ball" freight between major cities, as the review of individual road activities in this issue shows. Conversely, many interline movements of less-carload shipments were less satisfactory than those the year before and, indeed, during the war years. There is little doubt that railroad freight service as a whole has not improved as fast or as far as either the carriers or the shippers expected it would. But it may be asked whether the railroad business is the only one in which the postwar rebound was not as sprightly as everybody anticipated. The dream houses, the fine restaurant service, and the automatic automobiles which most people thought would be abundantly at hand as soon as the guns stopped smoking are still far away.

The reasons for whatever service deficiencies exist are apparent to any one in the business of transportation and need not be labored here. Suffice it to say that labor — both in quantity and quality, as well as in attitude — is an important factor; that the wearing out of railroad properties in the war effort is now exacting its price; and that the inability of the suppliers of the railroads to obtain materials for their production has put out of reach for the immediate present the full measure of fleets of fine new rolling stock and fixed property improvements which superlative service demands. Although the railroads entered orders for a record dollar volume of equipment and material and supplies in 1947, a substantial portion of the purchases were merely added to a backlog of deliveries piled up from preceding years.

Many Improvements Nevertheless

Despite their inability to get all they ordered in materials and equipment, the roads, nevertheless, put through improvement programs of a very high level in physical extent, as well as in terms of money. Separate articles in this issue summarize how the carriers have used their earnings or their credit — the latter depends on the former — to make their properties more serviceable and cheaper to operate. Yard improvements and expansion have been carried out on a large scale. This is especially important at a time when terminal congestion is the limiting factor in overall service and when yard costs are mounting faster than road-haul expenses. An unusual number of freight stations were



Unusually severe weather and snows greatly handicapped railroads in the Northeast this past winter

built new or modernized, to meet the needs of increased traffic, serve new industrial areas or to make possible the maximum effectiveness of mechanized freight handling.

While line-haul movement is not now a leading cause of delay, the continued expansion of centralized traffic control and modern block signals is still further speeding trains over the road. Modern radio and inductive communication systems have been installed to speed up the work of crews both on the road and in the critical terminal districts. Intensive development of new voice and printing line communications on the railroads have also speeded up service by expediting "paper work" so that cars are not delayed for billing, and by making it possible to notify shippers more promptly of passings and arrivals.

In rolling stock improvements the most spectacular development of the immediate past has been the rapid Dieselization of road freight service. Measured in gross ton-miles, 12.37 per cent of the 1947 traffic was hauled by Diesel locomotives, a tremendous relative increase compared with the 9.73 per cent so hauled in 1946 and the mere 0.22 per cent in 1941. In yard service, Diesels accounted for 30.85 per cent of total locomotive-hours, compared with 11.42 per cent in 1941.

But the railroads' steam locomotive fleet remains large and useful. To service it faster and reduce intermediate delays to freight, a number of railroads have under way extensive modernization schemes for steam locomotive shops and servicing facilities. The new freight cars and rebuilt cars (on which railroad shops have far exceeded their quotas over the past 12 months) are in every way better equipment than their predecessors, designed to reduce road failures, give lading a gentler ride and speed up stowing and unloading operations.

Car Supply Critical

Of more immediate importance to the carload shipper probably than any other aspect of railroad service is the supply of freight cars. The most effective means of increasing that supply is to add new cars to the fleet at a rate greater than necessary retirements of old stock. This the railroads have been able to do for five consecutive months starting November, 1947. But prior thereto, the railroads lost on net balance each month,

ending the year 1947 with fewer cars than they possessed at its beginning. In no month did the railroads receive all of the 10,000 new cars established by the O.D.T., the builders and themselves as the minimum necessary output if a severe car shortage is to be avoided.

Since new construction failed to match retirements and carloadings have increased, the railroads and their customers have had to continue, without relaxation, their long and hard campaign to get the most out of the cars that exist. Shippers' "vigilance" and "car efficiency" committees have continued to function; the Car Service Division has acted with unabated vigor; sections of the country — even geographical groups of railroads — have prolonged the controversy over "who has whose cars and why." Various groups have come forth with punitive per diems, charges and countercharges regarding the effect of freight train speed on car usage, proposal of more authority over car service for the I.C.C., etc.

Due to a slump in carloadings starting in December, however, the railroads have been able to re-encourage compliance with car service rules so as to get cars to home roads for upgrading and other repairs, as pointed out elsewhere in this issue. Draft quota orders on eastern carriers for western cars, which were indiscriminate with respect to ownership, were discontinued early in January, in favor of less stringent requisitions aimed at getting cars home.

Heavy industrial output and the rapid rise of new industry in the West and Southwest are expected to make the gondola car—especially the mill type—instead of the box car the No. 1 car supply problem. Even though western roads have ordered 90 per cent of the new gondolas now on the books, they still utilize and need a greater proportion of such cars than they own, having loaded 42 per cent of such cars in 1947, while owning but 31 per cent. Tank cars are also expected to be in particularly heavy demand.

The Per Diem Fight

When the number of cars is insufficient, any effort to spread them equitably, however wise, is never wholly satisfactory to any section or interest. Thus the railroads themselves have been unable to agree whether failure to own more cars than are on line should be subject to heavy charges or not. Almost all of the roads agree that the I.C.C. does not have the right to establish "punitive" per diem rates (i.e., rates designed to force greater ownership rather than to exact reasonable compensation for use) but they disagree widely on what constitutes a fair price for the hire of cars. A majority of members of the Association of American Railroads voted for two successive increases in the per diem rate—from $1.15 to $1.25, effective June 1, 1947, and from $1.25 to $1.50, effective September 1. A "caucus" of six western roads with a heavy car ownership and large originating agricultural traffic registered dissatisfaction with the latter rate as too low, in a complaint still pending before the I.C.C. The Chesapeake & Ohio has advocated a higher charge. The short lines and certain heavy terminating roads in the Northeast have opposed all per diem increases as penalizing them unfairly and without recourse, and the short lines have petitioned for a 95 cent rate. Meanwhile, a commission examiner proposed a punitive rate of $5 a day, which was reduced by the commission to a proposed $2, concurred in by the director of O.D.T. and other government officers. This $2 rate proposal was successfully fought in the federal courts by the A.A.R. and was permanently set aside by a ruling issued in December.

Voluntary Agreement on Car Detention

With the avowed purpose of reducing delays to cars while in the hands of the carriers, the I.C.C. issued, in October, its Service Order No. 778, considered generally as containing the most severe and far-reaching car service requirements ever imposed by that body. Placing a general 48-hr. limit on time within which the railroads had to place inbound loads and pull outbound loads or empties, and imposing maxima on the number of cars which could be held for prospective loading, based specifically on average loadings, the order was postponed progressively from its original effective date of November 1, on pleas of the railroads that it was too rigid and unworkable. Early in January, the order was permanently vacated. In lieu thereof, the railroads individually filed with the I.C.C. voluntary agreements that their officers would take steps to accelerate the movement of cars by placing inbound loads within 24 hours after first 7 a.m. after arrival; remove empties and outbound loads within 24 hours after first 7 a.m. after release; and limit hold cars to the current needs of industries, with appropriate exceptions. The chief means of accomplishing the purpose of the agreements is the maintenance of records sufficient to detect all delays in car handling.

Not only are terminals the scene of most of whatever congestion and "stickiness" in freight service exists, but they also account for a disproportionate share of the increases in railroad operating costs since the war. Railroads are able, by running longer and faster trains over better roadbeds with more refined signaling, to absorb at least some increases in line-haul costs in the stepped-up volume of traffic handled. Up to a certain point, increased volume also spreads the cost of terminal operations thinner, but, when that point is passed, "the more business you do, the more money you lose," as one railroader puts it ruefully. The point in question appears to be that optimum use of a freight station or yard at which no man or facility is idle.

When traffic increases beyond it, there develops congestion, poor use of equipment and overtime work at punitive rates.

Again, the wages of labor are a larger part of terminal costs than of most other aspects of railroading and the relative efficiency of employees has a greater effect on output. Therefore, wage increases in rapid succession, undue turnover and the necessity for hiring a substantial number of undesirable men have produced a lopsided inflation of terminal costs which has forced railroad management to re-appraise the value of certain types of business and lengths of haul.

One big railroad which, just before World War II, was preparing to "go after" relatively short-haul merchandise traffic with revolutionary ratings, service and

(Continued on page 193)

FREIGHT SERVICE SURVEY SHOWS MANY IMPROVEMENTS BY INDIVIDUAL ROADS

Steps taken by 65 different railways serve as an index to service improvements of the past 12 months benefitting shippers and receivers

Improvements in freight service since the last Freight Progress issue of *Railway Age* (May 17, 1947) have been pushed forward in the face of serious obstacles. Few improvements of a startling nature took place. In the main, better service came about through the addition of more modern motive power—much of it Diesel-electric—to the head ends of road freight trains. Many yards were enlarged, or modernized through installation of car retarders, night-lighting facilities, and intra-yard communication systems. The Diesel locomotive assumed an increasingly important role in switching service as well as on the main line. These factors combined to permit more consistent maintenance of schedules and on-time delivery of freight, as well as the establishment of some faster schedules.

A sustained volume of postwar freight traffic—many roads report record peacetime tonnage—worked to prevent any wholesale revamp of freight service, since existing facilities were, very generally, taxed to maximum capacity. The forces of nature combined to make railroading tougher last winter. Widespread areas suffered snowfalls and temperatures of unusual severity and duration.

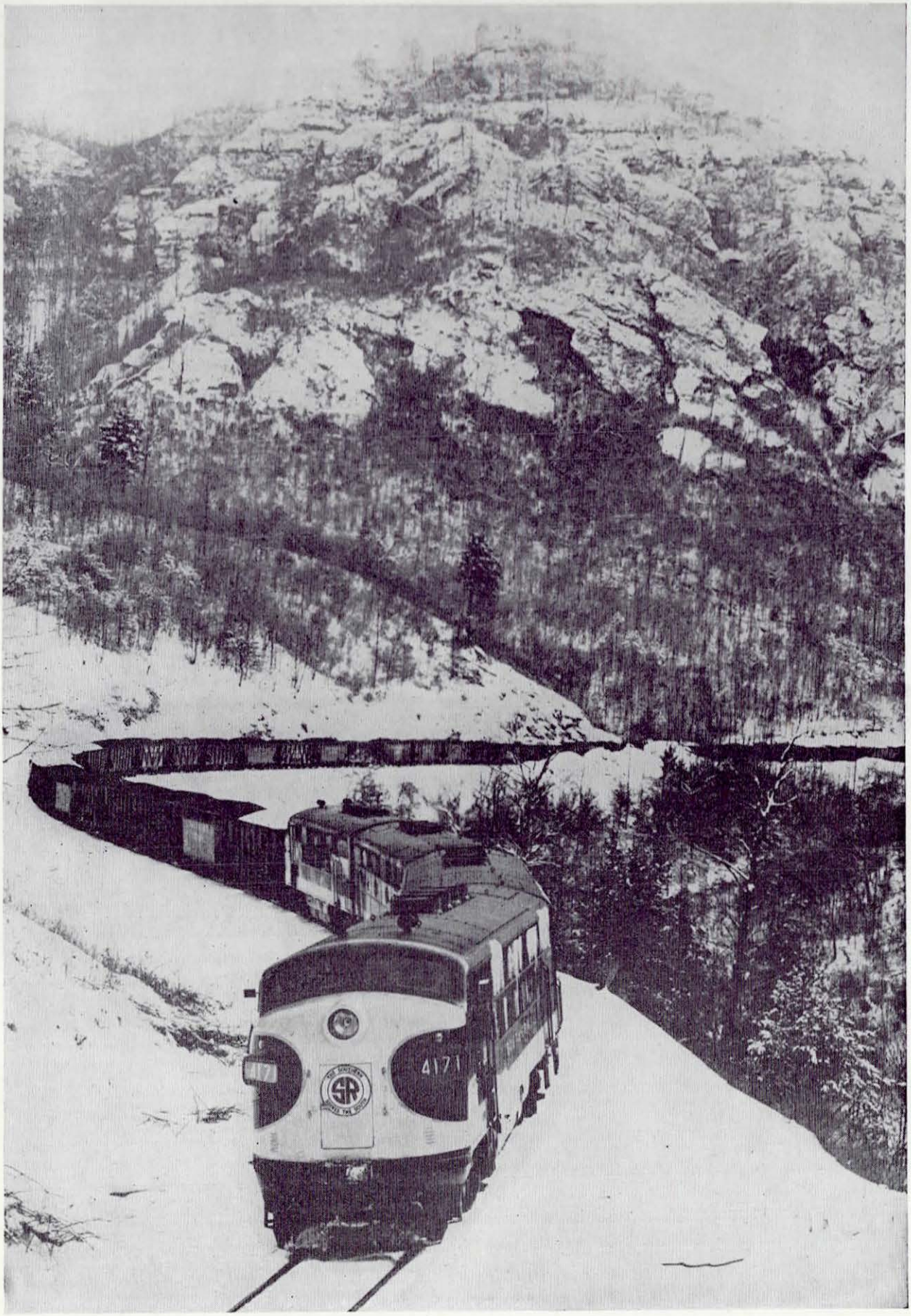
Despite factors which may have worked against the carriers in their efforts to provide better freight service, the accompanying table of "overnighters"—i.e.,

LEADERS OF THE FAST FREIGHT FLEETS

"Overnighters" offering first-morning delivery to points 300 or more miles distant

Railroad	Train No.	From	To	Mileage
A.T.& S. F.	39	Chicago	Kansas City*	449
	37	Dallas	Galveston	362
	40	Galveston	Dallas	362
	37	Kansas City	Oklahoma City	346
	40	Oklahoma City	Kansas City	346
A.C.L.	211	Rocky Mount	Savannah	372
	215	Waycross	Montgomery	314
B.& M.-N.Y.N.H.& H.	M-7	Portland, Me.	New York	338
C.N.	444	Toronto	Montreal	334
	495	Montreal	Toronto	334
C.P.	904	Toronto	Montreal	340
	905	Montreal	Toronto	340
	...	Montreal	North Bay	358
	...	Toronto	North Bay	339
C.& O.	40	Chicago	Detroit	336
	41	Detroit	Chicago	336
C.& N.W.	117	Chicago	Boone	340
	256	Omaha	Chicago	488
	484	St. Paul	Milwaukee	311
C.I.& L.	71	Chicago	Louisville	325
	70	Louisville	Chicago	325
C.R.I.& P.	OMX	Omaha	Tri-Cities**	329
	91	Tri-Cities**	Omaha	329
	93	Kansas City	El Reno	381
	96	Kansas City	Tri-Cities**	336
	91	Tri-Cities**	Kansas City	336
F.E.C.	345	Jacksonville	Miami	366
G.T.W	529–537	Detroit	Chicago	316
	536–530	Chicago	Detroit	316
	2–484	Chicago	Port Huron	334
	490	Chicago	Port Huron	334
	535	Port Huron	Chicago	334
	537	Port Huron	Chicago	334
G.N.	...	Minneapolis	Grand Forks	329
I.C.	MS-1	Chicago	Memphis*	510
	SE-1	Chicago	Carbondale	307
	SN-3	E. St. Louis	Memphis	313
	MS-2	Memphis	E. St. Louis	313
K.C.S.-L.& A.	77	Shreveport	New Orleans	313
L.V.	BNE-2	Buffalo	Bethlehem	359
L.& N.	71	Cincinnati	Nashville	301
	71	Montgomery	New Orleans	318
	73	Nashville	Montgomery	305
	58	Nashville	E. St. Louis	324
	79–179	E. St. Louis	Louisville	321
M.-K.-T.	275	Kansas City	Oklahoma City	343
	81	Dallas	Houston	339
	270	Houston	Dallas	339
	81	St. Louis	Parsons	387
	281	Ft. Worth	Houston	327
	270	Houston	Ft. Worth	327
M.P.	63–363–364	St. Louis	Memphis	328
	63–69	St. Louis	Little Rock	343
	71–173	St. Louis	St. Joseph	353
	68	Pueblo	Hoisington	339
	61	Hoisington	Pueblo	339
	67	Dupo	N. Little Rock	369
	361	Dupo	McGehee	417
	HO	Texarkana	Van Buren	300
	67	Longview	San Antonio	340
	60	Texarkana	Poplar Bluff	325
	73–75	Ft. Worth	San Antonio	337
	74–72	San Antonio	Ft. Worth	337
	62–173	Hoisington	St. Joseph	352
	77	Kansas City	Scott City	406
	74–66	San Antonio	Longview	340
N.Y.C.	NB-1	New York	Buffalo*	429
	BN-2	Buffalo	New York*	429
N.Y.C. & St. L.	CC-2	Chicago	Cleveland	336
	BC-1	Cleveland	Chicago	336
N.Y.N.H.& H.-P.R.R.	NE-1	Boston	Philadelphia*	330
P.R.R.	NW-88	Chicago	Columbus	308
	NW-85	Columbus	Chicago	308
	IL-1	Louisville	Chicago	305
	IL-2	Chicago	Louisville	305
St.L.-S.F.	37	St. Louis	Tulsa	424
	835	St. Louis	Memphis	305
	32	Oklahoma City	Springfield, Mo.	303
	31	St. Louis	Joplin	333
St.L.S.W.	43	St. Louis	Pine Bluff*	398
S.A.L.-M.D.& S.	2–88–71	Macon	Jacksonville	311
Southern	73	Chattanooga	Meridian	300
	72	Meridian	Chattanooga	300
	54	Chattanooga	Louisville	316
	54	Chattanooga	Cincinnati	338
	53	Cincinnati	Chattanooga	338
	2–53	Cincinnati	Knoxville	308
	53	Atlanta	Jacksonville	331
	52	Jacksonville	Atlanta	331
	52	Memphis	Chattanooga	316
	53	Chattanooga	Memphis	316
	59	Atlanta	Meridian	340
	57	Potomac Yard	Spencer	324
	155	Spencer	Atlanta	307
Wabash	96	St. Louis	Fort Wayne	342

*Merchandise traffic only.
**Davenport, Rock Island and Moline.


4171
SR

trains offering late afternoon closings with first-morning delivery of l.c.l. or first-day placement of carloads at points 300 or more miles distant—indicates an increase in the number of such "manifest" trains from a total of 77 in May, 1947, to a total of 95 in May, 1948. The total daily mileage performed by these trains increased from 27,261 a year ago to 32,407 in May, 1948. Not included in the table are many trains which perform a like service for distances only slightly under 300 mi.

Methods of Handling Improved

Outside the field of actual train operation, many steps were taken to facilitate the handling of freight. The use of mechanized equipment supplanted hand labor in an ever-increasing number of freighthouses. A number of roads report extensive experimentation in the use of bulkheading and special devices to improve loading practices and prevent loss and damage to freight. The use of coordinated highway truck service to perform local freight work between terminals was extended on a number of roads.

Tonnage-Speed Index at New High

Gross ton-miles (including cars, contents and cabooses, but excluding locomotives and tenders) per freight train-hour in 1947, compared with 1946 are shown separately herewith for each individual road, where available. This ratio is perhaps the best available general index to railroad operating efficiency. The purpose of spreading the figures on the record is not for comparison between different roads, since they are affected by topography, climatic conditions, density and class of traffic, and other factors over which management has no control. They show rather the change in the individual road's performance in the immediate past. Other recent developments also are outlined.

Class I line-haul carries as a group reached an all-time peak in gross ton-miles per freight-train-hour in 1947 when they averaged 38,462, an increase of 1,410 over 1946. Averages of this basic operating measurement for last seven years—as well as 1931 and 1921—show an almost uninterrupted upward curve of improvement, as follows:

1947	38,462	1942	35,503
1946	37,057	1941	34,684
1945	36,954	1931	26,72'
1944	37,298	1921	16,555
1943	35,970		

Akron, Canton & Youngstown—With the receipt of new Diesel-electric road locomotives early in 1948, the through freight train operations of this railroad were almost completely Dieselized. Schedules are closely integrated with those of its 10 connecting lines.

Atchison, Topeka & Santa Fe—Freight train schedules

1947..47,643
1946..45,878

west of Kansas City, Mo., have been rearranged to permit connections with overnight merchandise train No. 39 from Chicago, providing second-day delivery of l.c.l. to 300 towns in Kansas and Oklahoma. First-morning delivery of merchandise from Fort Worth, Tex., and Dallas to San Angelo, 287 mi. southwest, and Lubbock, 420 mi. west, and points intermediate, was established on November 1, 1947. Both operations are, in part, in conjunction with the Santa Fe Trailway truck service. A recent revision of westbound transcontinental operations has been made to insure on-time deliveries at California and intermediate points. Completion of a double-track steel arch bridge over Canyon Diablo on the main line west of Winslow, Ariz., removed the only remaining section of single track on the transcontinental lines west of Belen, N. M. Work commenced on a modern electric hump yard at Argentine, Kan., the road's greatest volume terminal. The average speed of freight trains during 1947 reached 19.6 m.p.h.

Atlanta & St. Andrews Bay—Road freight operations have been completely Dieselized.

Atlanta & West Point—This railroad and the affiliated Western of Alabama and Georgia offer overnight carload and l.c.l. freight service to all principal points on their lines. Schedules are closely coordinated with those of 17 connecting lines.

Atlantic Coast Line—During the heavy perishable

1947..27,428
1946..27,328

shipping season, train No. ACD-2 was operated between Jacksonville and Richmond, providing third-morning delivery from Florida origin points to Baltimore, Philadelphia and New York. Emphasis has been placed on systematic classification of l.c.l. freight so as to eliminate as far as possible intermediate transfers.

Baltimore & Ohio—"Sentinel Service," B.&O.'s system

1947..31,785
1946..31,259

of personalized "traffic planning" with automatic records on individual carload shipments, had a "first birthday" on March 3. Two "Sentinel Service" trains were established during the year just past—No. 85 from Pittsburgh, Pa., to Benwood (Wheeling), W. Va., and Second 91 from Indianapolis, Ind., to Hamilton, Ohio. Other new freight trains added to the B.&O.'s schedules include No. 86 from St. Louis, Mo., to Cincinnati, Ohio; No. 394 from Willard, Ohio, to Benwood; No. 81 from Benwood to Clarksburg, W. Va.; and No. GM-96 from Brunswick, Md., to Wilmington, Del. Operation of "Banana specials" from Locust Point, Md., whenever 25 or more cars are available, was reestablished and the special service has been required about twice a week. Twenty-three modern high-power steam locomotives were acquired and put in fast freight service. An electric coal dumper on the lakefront at Lorain, Ohio, replaced older facilities 1½ mi. inland on the Black river. The new facilities greatly reduce the turn-around time of vessels and permit car-a-minute loading compared with an average of but 30 cars an hour at the old facility.

Bangor & Aroostook—A record 3,623,088 tons of revenue freight were handled during

1947..20,472
1946..19,259

1947, the increase amounting to 66 per cent over the 1942 figure and approximately 4½ per cent over the number of revenue tons handled in 1946. Two 4,500-hp. road freight Diesels were put into operation last November

Diesel power has helped the railroads to increase the tonnage of trains without sacrifice in speed

Yard track space remains at a premium despite the enlargement of many terminal facilities

and delivery of two more locomotives of the same type is expected currently.

Bessemer & Lake Erie—The mass movement of ore, coal, coke and limestone for the iron and steel industry constituted the major function of the B.&L.E., and while no new freight schedules were established, shippers in general continued to benefit by the dependable service which is available to them.

Boston & Maine—The B.&M., with most of its tonnage freight now hauled in Diesel-powered trains, concentrated efforts on the further improvement of on-schedule performance. Modern car retarders replaced old-type retarders at the Boston yards and two-way radio communication between the yardmaster's office and switching locomotives was installed at Mechanicville, N. Y.

1947..34,393
1946..34,035

Canadian National—On December 1, 1947, new scheduled freight trains were established between Montreal, Que., and Moncton, N. B., and between Lairet, Que., and Monk. Both trains expedite export traffic for Halifax, N. S., and St. John, N. B., as well as regular traffic to the Maritimes. On January 12, an advance section of No. 405 from Halifax to Montreal was inaugurated to handle import traffic and to relieve regular No. 405.

1947..26,246
1946..26,308

Canadian Pacific—Two freight trains have been added to the list of "overnighters," one from Montreal, Que., to North Bay, Ont., and another from Toronto to North Bay. A reduction of 14 hr. in the running time of transcontinental freights in both directions between Vancouver, B. C., and Montreal is anticipated for early summer, and at the same time these trains will be extended through to Saint John, N. B. This will be a through run of 3,363 mi., which the railroad describes as the longest scheduled freight run in North America. Work is progressing on the construction of a new car retarder hump yard at Montreal which will consolidate the work now performed in a number of separate yards and speed up deliveries.

1947..27,456
1946..27,187

Central of Georgia—A new schedule for train No. 38 between Birmingham, Ala., and Atlanta, Ga., has been established. Making close connection with the Illinois Central and St. Louis-San Francisco at Birmingham, this train departs at 7:30 a.m. and arrives in Atlanta at 3:30 a.m. the following morning, insuring placement of cars for that morning. Many "overnighters" are scheduled between Central of Georgia cities just under 300-mi. distant. Following a study of l.c.l. freight movements, package car lines were revised, effective February 1, to enable maximum use of solid loads, by-passing intermediate transfers and eliminating extra handling and delay.

1947..29,529
1946..29,675

Central of New Jersey—This railroad and the affiliated Central of Pennsylvania quickened the schedule of fast freight train No. JC-5 so as to leave Jersey City, N. J., later, affording an opportunity to get more of the day's business forwarded each day from the New York area, while retaining the same deliveries and connections at Wilkes-Barre, Pa., and Scranton. Upon receipt of additional Diesel-electric road freight locomotives during 1948, other improvements in through freight service are contemplated.

1947..35,896
1946..31,994

Chesapeake & Ohio—On July 1, 1947, manifest schedules were inaugurated on the Pere Marquette district, most of which were in effect prior to the war years, but which were reinstated with substantially improved elapsed time. The C.&O. handled 93 million tons of coal in 1947—the greatest volume in the company's history, and on April 29, 1948, loaded the record number of 6,178 cars of coal in the single 24-hr. period. Special attention was given to prompt movement of empty cars so as to make equipment available for new loads. All freight other than coal and coke

1947..54,555
1946..52,070

reached a high of more than 9 billion ton-miles, 9 per cent greater than in 1946. Besides building two extensions of line into new coal fields, major improvements aimed at improved service included construction of a new, modern coal pier at Newport News, Va., modernization of Walbridge (Toledo, Ohio) yards by the installation of 15 electro-pneumatic car retarders, and main-line track relocations reducing grades and curvatures and increasing maximum train speeds.

Chicago & Eastern Illinois—Fast overnight freight service is provided in both directions between Chicago and St. Louis, Mo., and Evansville, Ind. Ton-miles handled in 1947 increased 7 per cent over the 1946 figure.

1947..34,996
1946..34,096

Chicago & North Western—Efforts were concentrated on the improved performance of existing fast freight schedules. The addition of 39 1,500-hp. Diesel freight locomotive units and the modernization of 8 Class H steam freight locomotives during the past year will help speed freight movements during 1948. Other improvements contributing to expedited freight service include the installation of centralized traffic control over portions of the main line between Chicago and Omaha, Neb., the construction of modern fueling stations at six points on the system, the rebuilding of two hump retarders at Proviso (Ill.) yard, and the extension of sidings and improvements to yards at six locations.

1947..31,879
1946..32,426

Chicago, Burlington & Quincy—All principal time freight trains have been Dieselized and a larger volume of lower-classed freight, which formerly moved in extra or unscheduled trains, is now moving on the high-speed trains. On-time performance and scheduled deliveries at interchange points have been greatly improved.

1947..44,290
1946..42,217

Chicago Great Western—A program for the substitution of Diesel-electric power in all service except on light-traffic branches and at a few isolated yards was initiated, and delivery has been taken on twelve 4,500-hp. locomotives for road freight service. A total of 22 Diesel-electric switching locomotives are either in service or on order, 12 additional road freight Diesels are on order, and 8 Diesel road switchers are scheduled for delivery.

1947..35,600
1946..34,031

Chicago, Indianapolis & Louisville—All through-freight operations and all normal local trains are now powered by Diesel-electric locomotives. Twenty-five 40-ft. box cars are being equipped with Evans "Utility Loader" devices and will be used in l.c.l. as well as carload traffic. Installation of similar equipment in twenty 50-ft. box cars is contemplated.

1947..29,528
1946..28,761

Chicago, Milwaukee, St. Paul & Pacific—Facilities were expanded for the more expeditious handling of increased traffic at Glendale yard, Milwaukee, Wis., Bensenville yard, west of Chicago, and Pig's Eye yard, St. Paul, Minn. A new storage yard was constructed at Port Washington road, Milwaukee, and at Goose Island, Chicago, a new 60-ft. by 583-ft. one-story brick freighthouse was constructed. Sixteen Diesel-electric locomotives for freight and switching service were received, and, with those now on order, road freight service will be about 20 per cent Dieselized and yard operations 35 per cent Dieselized.

1947..34,474
1946..35,015

Chicago, Rock Island & Pacific—The Rock Island has augmented the service of its fleet of "Rocket freights" and other fast scheduled trains by extensions of its highway subsidiary. Coordinated rail-truck service was extended in 1947 to a total of 4,000 highway-miles.

Construction is in progress on large freight terminals to serve Kansas City, Kan., and Dallas, Tex. Two-way radio communication has been installed on switch engines operating in the Armourdale (Kansas City, Kans.) yards, so facilitating the movement of cars and trains through the terminal that additional installations are now being undertaken in Blue Island, Ill., and Silvis freight yards.

1947..37,107
1946..36,683

Delaware & Hudson—An exceptional job of moving heavy freight trains fast was accomplished during 1947. The average speed of road freight trains rose to 17.8 m.p.h., an increase of 0.7 m.p.h. over 1946. Improvement in performance is attributed chiefly to the results of recent acquisitions of 40 fast, powerful 4-6-6-4 and fifteen 4-8-4 type steam locomotives. Twenty-four Diesel-electric switching and road-switcher type locomotives also have been acquired.

1947..54,719
1946..52,022

Delaware, Lackawanna & Western—The on-schedule performance of "manifest" trains has been given particular attention with the result that existing schedules are adhered to with dependability. New England l.c.l. freight is being handled at Scranton (Pa.) transfer on the first day for second-morning delivery to western connections.

1947..42,760
1946..41,999

Denver & Rio Grande Western—Effective June 16, 1947, new merchandise schedules, coordinated with those of the subsidiary Rio Grande Motor Ways, were published after an exhaustive study of shipper requirements. Concentrated efforts brought about improved over-the-road performance and a reduction of terminal delays in the operation of scheduled freight trains.

1947..35,229
1946..31,829

Duluth, Missabe & Iron Range—A 30-mi. extension to the Wales (Minn.) branch has been undertaken to secure for the D.M.&I.R. access to a heavily timbered forest area expected to produce a heavy movement of pulpwood and other forest products during the next 18 to 20 years. First-morning delivery of carload and l.c.l. freight is available from Duluth to practically all points on the road.

1947..76,851
1946..76,638

Elgin, Joliet & Eastern—Delivery is being taken on the first of an order for 25 2,000-hp. road-switcher Diesel-electric locomotives, which will largely Dieselize road freight service on this railroad.

1947..16,125
1946..18,099

Erie—Through the acquisition of additional Diesel-electric power, the Erie has been able to assign Diesel locomotives to the bulk of its fast freight trains in main-line service between Marion, Ohio, and Salamanca, N.Y., and between Hornell, N.Y., and Jersey City, N.J. Extension of teletype service to 19 off-line traffic offices during the past year has greatly facilitated tracing service for Erie shippers.

1947..52,046
1946..51,510

Florida East Coast—Overnight merchandise service is furnished between all principal points on the F.E.C. During the heavy citrus shipping season, a special pick-up train is operated from Fort Pierce, Fla., to New Smyrna, with a closing hour of 9:00 p.m., and delivery to connections at Jacksonville is effected at 6:30 a.m. so as to provide a third-morning arrival at New York markets, 1,264 mi. to the north.

Fort Dodge, Des Moines & Southern—Three new electric switch engines have been placed in service and additional switching crews have been established at Fort Dodge, Iowa, and Des Moines, so as to give "round-the-clock" interchange service at these points. To insure 8 a.m. delivery at all terminal destinations, extra service is operated as required.

Grand Trunk Western—A second section of train No. 484 between Chicago and Port Huron, Mich., has been recently established. Second 484 departs from Elsdon yard, Chicago, at 8:25 p.m., picking up traffic at Blue Island, Ill., South Bend, Ind., Battle Creek, Mich., and Durand, arriving at Port Huron at 7:30 a.m., for early morning delivery to the Canadian National. Overnight freight service on both carload and l.c.l. traffic is generally rendered between all G.T.W. stations.

1947..40,738
1946..49,979

Great Northern—Efforts have been concentrated on the on-time performance of existing fast freight schedules. The addition of new Diesel-electric and electric locomotives to the Great Northern's fleet of modern motive power during the past year has contributed materially toward the fulfillment of this effort.

1947..42,019
1946..40,321

Green Bay & Western—Since the recent addition of three 1,500-hp. Diesel-electric road freight locomotives, all through freight trains are handled by Diesels or by steam locomotives 11 years of age or less. Time freight No. 1 leaves Winona, Minn., at 10:01 a.m., with freight from western connections, and is due in Kewaunee, 251 mi., for connection with Ann Arbor and Pere Marquette car ferries at 8:05 p.m. the same day. No. 2 departs from Kewaunee at 12:30 p.m. and is scheduled to arrive Winona at 11:20 p.m.

Gulf, Mobile & Ohio—On June 1 direct connections were established between the G.M.&O. and the lines of the former Alton, eliminating the time previously consumed in intermediate switching. Train No. 82 was rescheduled to provide early first-morning arrival at Chicago from St. Louis. Schedules of the G.M.&O. and the former Alton were coordinated to provide through service in both directions between Chicago, Kansas City, Mo., and points in the South and Southeast. Highway operations of the subsidiary Gulf Transport have been extended over practically the entire rail system—719 route-miles were added during 1947—and through coordinated service the movement of merchandise to and from local stations has been greatly expedited. Sixty-five per cent of the G.M.&O.'s 10,925 revenue service freight cars are eight years of age or less.

1947..48,586
1946..36,203

Illinois Central—Effective May 27, 1947, a new train designated as "CC2" was inauguated from Council Bluffs, Iowa, to Chicago on a 24-hr. schedule. On September 8 train LM-1 was established from Louisville, Ky., to Memphis, Tenn., connecting with the Baltimore & Ohio evening train from Cincinnati and with I.C. No. CN-1 for New Orleans, La., advancing deliveries to points Memphis to New Orleans by 24 hr. Train LM-3 was set back to depart from Louisville 2 hr. later than formerly, thus connecting with the B.&O. morning train from Cincinnati. Effective November 18 the schedule of MS-4, handling Florida perishables and other high-class traffic from the southeast, was shortened 1 hr. to arrive at East St. Louis, Ill., at 2:00 p.m. Effective January 3, 1948, loading handled on train NC-2 from New Orleans was advanced 2 hr. to Chicago and Indianapolis, Ind.

A system has been inaugurated whereby l.c.l. freight in both directions between Chicago and Memphis may be shipped in aluminum containers which are mechanically transferred from highway trailers to railroad flat cars without intermediate handling of the lading. The container operation is giving patrons expedited service and has practically eliminated loss and damage to lading so transported.

1947..43,154
1946..42,463

Kansas City Southern—In conjunction with the Louisiana & Arkansas, all through freight operations between Pittsburg, Kan., and New Orleans, La., and between Dallas, Tex., and New Orleans, have been Dieselized. More consistent on-time performance of fast freight schedules is being achieved. Overall freight train speed was increased from 16.8 m.p.h. in 1946 to 19.8 m.p.h. in 1947.

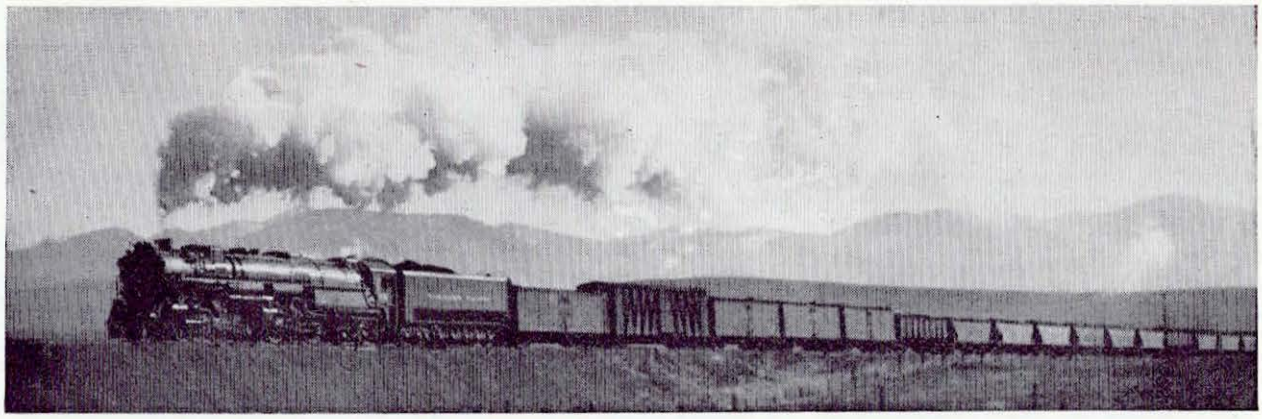
1947..54,785
1946..44,327

Lehigh Valley—To provide symbol-train handling for a greater number of cars, sections of trains from Buffalo, N.Y., and Suspension Bridge are no longer combined at Manchester, but are operated through to Croxton, Pa., or Jersey City, N.J. Under this arrangement, all freight is accorded the same service as perishable traffic. A new symbol train, CM-1, operates from Wilkes-Barre, Pa., west to Manchester, connecting with trains MS-1 and MB-1. Other westbound trains are operating on improved schedules.

1947..52,536
1946..51,073

Louisville & Nashville—A 137-mi. installation of C. T.C. between Louisville, Ky., and Henderson, on the main line between Louisville and St. Louis, Mo., has cut from 1½ to 2 hr. from the running time of tonnage freight trains. Twenty-two modern 2-8-4 steam freight locomotives are under construction for the L.&N.

1947..27,979
1946..28,347



Average freight train speed in 1947 was 16 m.p.h. Two years after World War I, the average speed was but 10.3 m.p.h.

Maine Central—Tons of revenue freight handled in 1947 totalled 9,249,843, the highest tonnage in any year of the company's history, and an increase of 3.1 per cent over 1946. Two 3,000-hp. Diesel-electric freight locomotives were placed in service in December.

Minneapolis & St. Louis—During the past 12 months, 7 Diesel freight locomotives and 1,150 freight cars were placed in service. Fast scheduled truck service to supplement rail service in the handling of l.c.l. merchandise has been expanded and now operates between most M. & St. L. points in Minnesota, South Dakota and Iowa.

Minneapolis, St. Paul & Sault Ste. Marie—By speeding up the schedules of Trains 89 and 90 between Minneapolis, Minn., and Portal, N. D., in connection with the Canadian Pacific, Soo Line service has been shortened 24 hr. to and from the Twin Cities and the West coast. By an agreement with the C.P., effective May 1, eastbound traffic from Western territory, which had been received previously at Noyes, Minn., is delivered at Portal, shortening the mileage and providing improved service. The addition of 18 Diesel-electric road freight and road switching locomotives has helped to speed service, and will completely Dieselize operations of the road west from Thief River Falls, Minn.

1947..32,450
1946..31,581

Missouri-Kansas-Texas—Efforts were directed toward the expansion of industrial and agricultural development in Katy territory. Special tours were arranged to carry to agricultural leaders and farmers the latest ideas on soil conservation and related problems. Ten Diesel-electric switching locomotives and 7 road freight Diesel locomotives were acquired.

1947..36,387
1946..34,199

Missouri Pacific—The M.P. stands at the head of the list of overnight freight trains serving points 300 or more miles distant, from the standpoint of the number of such trains operated. An unusual approach to the loss and damage prevention effort has been the organization of "teams" made up of a station and claim prevention inspector, a traffic department representative, and other employees engaged in handling freight, including agents, yardmasters, engine foremen, switchmen, engineers, conductors, car foremen, section foremen and chief clerks. These teams work over a district with the general or division superintendent, inspecting stations, yards, repair tracks, attending local meetings, and observing operating practices, for periods of two weeks each, and have been successful in correcting many conditions which cause loss and damage, and in developing many improved practices. Since inauguration of the teams in June, 1947, at the suggestion of Chief Executive Officer P. J. Neff, 44 teams have been organized for 2-week periods. Since that time, over, short and damage reports have decreased approximately 25 per cent as compared with the same period a year previous, and loss and damage claims filed have decreased 9 per cent.

1947..40,216
1946..39,276

Nashville, Chattanooga & St. Louis—Freight train performance has been improved by extensive improvements to the physical property of the railroad. Seventy-one curves have been eliminated entirely and the severity of 130 reduced to two degrees or less. The main-line mileage has been reduced 3.4 mi. by track relocations. Receipt of road freight Diesel locomotives in early 1948 is expected further to expedite the movement of freight trains.

1947..28,164
1946..25,999

National Railways of Mexico—Conversion of the old narrow-gage Interoceanic of Mexico, between Vera Cruz and Mexico City, to standard gage has been completed, making available improved service on traffic handled through the port of Vera Cruz. Arrangements for the handling of international l.c.l. traffic on through bills of lading, without the necessity of tendering shipments to brokers or agents at the border gateways, were made effective on May 1.

New York Central—Nearly 300 regular symbol freight trains are in service, and details on over 100 of these trains are published in a recent 23-page schedule of fast freight trains available to the public. The "Pacemaker" freights between New York and Buffalo, N. Y., now Diesel-powered, handle about 50 cars in each direction and make the 429-mi. run in 11¼ hr. with 4 intermediate stops. Regularly assigned "Pacemaker" cars are handled in expedited connections

1947..38,928
1946..39,385

beyond Buffalo to Detroit, Mich., Cleveland, Ohio, Toledo, Columbus, Cincinnati, and Indianapolis, Ind., providing second-morning service to those points. Plans to extend this service to other N.Y.C. cities are under consideration as soon as schedules can be worked out and the necessary high-speed equipment assembled. Extensive improvements to facilities and equipment have been undertaken in order to meet the transportation demands of the present (1947 freight traffic volume was the greatest of any peacetime year) and the foreseeable future.

New York, Chicago & St. Louis—Efforts were concentrated on the maintenance of existing high-speed freight schedules. Purchases of new freight cars up to April 1 brought the Nickel Plate's total ownership to 14,762, an increase of 30 per cent over April, 1941.

1947..48,696
1937..48,782

New York, New Haven & Hartford—An average of 1,200 bulkheads a month are being used in merchandise cars. A second container and loading engineer has been employed, so that the services of two qualified engineers are available to assist patrons in damage-free shipping. A system for the speeding up of yard clerical work—with greater accuracy assured—has been installed at Cedar Hill (Conn.) yard. The yard clerk is furnished with a "Soundscriber." In checking freight trains he merely speaks the initial and car number into a microphone. His voice is simultaneously recorded on a disk at the terminal headquarters, 2 mi. distant, where it is played back to a clerk who arranges the waybills and cards in train check order.

1947..31,621
1946..30,553

Norfolk & Western—Effective August 24, 1947, train No. 84, which formerly operated from Cincinnati, Ohio, and Columbus to Roanoke, Va., was speeded up and extended to Norfolk, Va. No. 84 leaves Cincinnati at 2:00 p.m. and Columbus at 2:30 p.m., arriving at Petersburg, Va., at 8:00 p.m. the following day for connection with Seaboard Air Line and Atlantic Coast Line trains to the Carolinas, and terminates at Norfolk at 11:30 p.m. Improvements which have contributed to the on-time performance of fast freights include a 7-mi. track relocation between Portsmouth, Ohio, and Cincinnati, and the installation of C.T.C. over that 96-mi. district. Construction work began on a $12 million project to reduce grades and curvatures over Elkhorn mountain in West Virginia. A new $6 million merchandise pier has just been placed in service at Lamberts Point (Norfolk), Va. Four ocean-going freighters can be loaded simultaneously at the new pier, which contains approximately 336,000 sq. ft. of storage space and is supported by two large warehouses and a 280-car capacity yard. The N.&W. has under construction, or programmed for 1948, 17 new heavy-duty and 5 high-speed steam freight locomotives.

1947..63,490
1946..61,156

Norfolk Southern — Plans to completely streamline freight service are being rapidly pushed to completion. Already in service are 10 road Diesel locomotives and 5 Diesel switching locomotives. A new produce terminal at Euclid (Norfolk), Va., is being rushed to completion. This facility is designed to expedite the handling of produce, especially white potatoes. Yard facilities are being rearranged and expanded.

Northern Pacific—Space radio equipment for communication between the yardmaster and switching crews has been installed at Seattle, Wash. An extension of this equipment for end-to-end and train-to-train communication over the entire subdivision between Yakima, Wash., and Auburn is now in progress. The primary purpose of this installation is to facilitate freight train operations over the Cascade mountains, especially under adverse weather conditions. A major track relocation on the main line between New Salem, N. D., and Kurtz has reduced the mileage by 9¼ mi. and the ruling grade from 1 per cent to 0.45 per cent eastbound and 0.6 per cent westbound, permitting much faster movement of tonnage trains over this portion of the line. Freight stations at Tacoma, Wash., Missoula, Mont., and Billings were rebuilt or modernized.

1947..43,344
1946..39,725

Pennsylvania—Ninety-three new 60 ft. box cars have been equipped with a special load retainer and assigned to system l.c.l. merchandise service. This device has proven effective in permitting the full loading of l.c.l. cars, at the same time preventing damage to the freight from shifting or crushing. An additional 300 50-ft. cars are currently being equipped with this device. Trains LCL-1 and CG-8 have been extended to operate through from Jersey City, N. J., to Chicago on a schedule of 41 hr. 15 min. westbound and 37 hr. 15 min. eastbound, and Diesel power has been regularly assigned to these schedules. In connection with the New York, New Haven & Hartford, radar equipment has been installed on floating equipment at New York harbor, permitting continuous performance in all degrees of harbor visibility.

1947..36,859
1946..37,125

Pittsburgh & West Virginia—Road freight Diesels are handling much of the tonnage over the eastern portion of the railroad. Schedules are closely dovetailed with those of connecting carriers at the east and west ends of the line.

Reading—Maintenance of existing scheduled freight service has been improved to a high degree of dependability. Twenty-eight new steam and Diesel-electric road and switching locomotives aided in the general acceleration of service. Port Richmond terminal, at Philadelphia, Pa., exceeded all previous records by handling 26 million bushels of grain and over 4½ million tons of coal in 1947.

1947..34,974
1946..31,522

St. Louis-San Francisco—During August, 1947, new schedules were established for six fast freight trains. No. 35 between St. Louis, Mo., and Tulsa, Okla., was speeded up by 2 hr. The schedule of No. 33 on the same run was reduced 1 hr. 30 min. No. 133 between Kansas City, Mo., and Tulsa was scheduled to leave Kansas City 50 min. later and

1947..33,139
1946..31,755

arrive at Tulsa 10 min. earlier than heretofore. No. 731 between Monett, Mo., and Fort Smith, Ark., leaves Monett 7 hr. 15 min. later, making the same scheduled time to Fort Smith, but connecting with Nos. 37, 31 and 33 from St. Louis, affording early second-morning delivery at Fort Smith. No. 835 from St. Louis to Memphis, Tenn., departs from St. Louis at 8:30 p.m., 1 hr. later, with the same scheduled arrival at destination. The Frisco is completing the construction of a new 2,482-car "saucer-shaped" yard at Springfield, Mo. The new yard—the largest single construction project ever undertaken by the Frisco—will cost approximately $5,000,000, and is expected to speed the handling of freight through that important terminal.

St. Louis Southwestern — "Blue Streak" fast freight service is providing overnight service to points as distant as 450-mi. For the year 1947, average miles run per freight car per day were 97.5, the highest for any of the large Class I railways, and an increase of 13.5 mi. over the 1946 average. In December 1947, miles per car-day reached 104.6.

1947..45,653
1946..44,142

Seaboard Air Line—Particular effort is being exerted to insure that freight schedules are maintained and freight delivered promptly and in good condition. Important improvements effected to facilitate the movement of trains include extension of centralized traffic control from Cary, N. C., to Moncure, and from Wildwood, Fla., to Hawthorne; and the installation of dispatcher-controlled automatic signals between Hamlet, N. C., and Savannah, Ga. Radio communication between switching locomotives and fixed yard stations was established at Richmond, Va., Savannah and Atlanta, Ga. A new phosphate rock elevator was placed in service at Tampa, Fla. The new facility can handle 1,500 tons an hour, double the rate of the elevator it replaces.

1947..33,234
1946..33,050

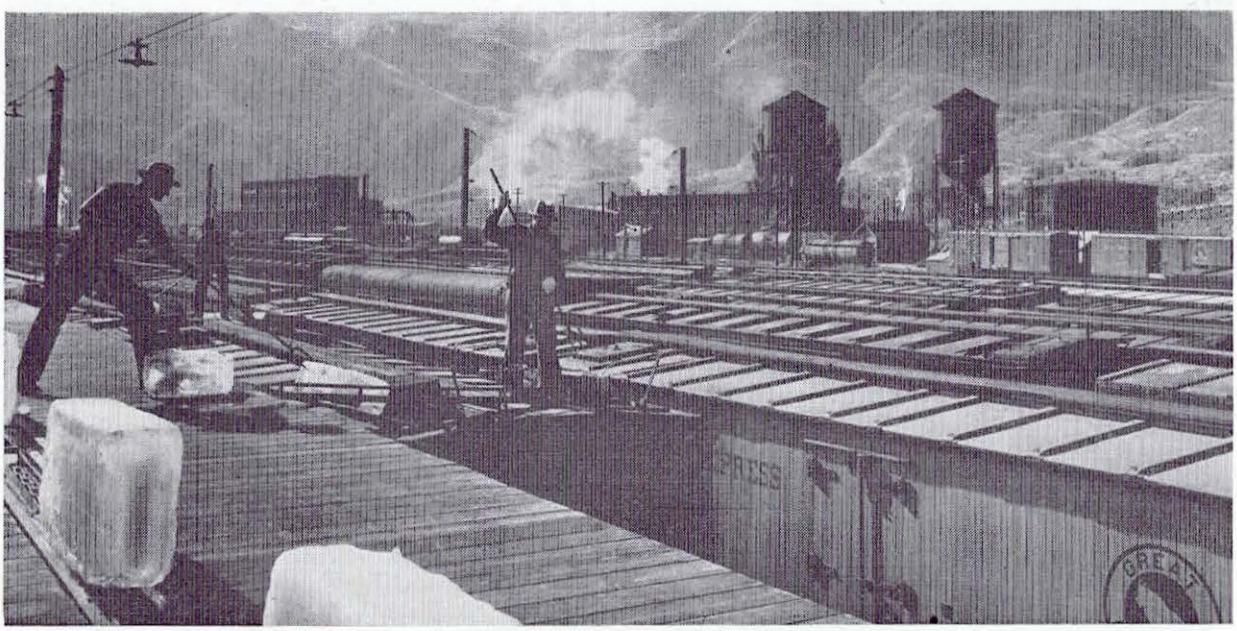
Southern—A system-wide revision and speed-up of through freight schedules has been effected during recent months. Freight runs between St. Louis, Mo., and New Orleans, La., and points in Georgia, the Carolinas, Florida and Alabama have been cut by seven or more hours; between Potomac yard at Alexandria, Va., and Atlanta by three to eight hours, and between New Orleans and Potomac yard by over six hours. On March 1 the Southern issued a schedule of through freight trains between principal points—for distribution to shippers—containing 18 tables showing the improved service. A merchandise transfer has been put into operation at Greenville, S. C. This transfer operates at night, working trap cars which have been brought in from numerous points in that area.

1947..27,912
1946..25,198

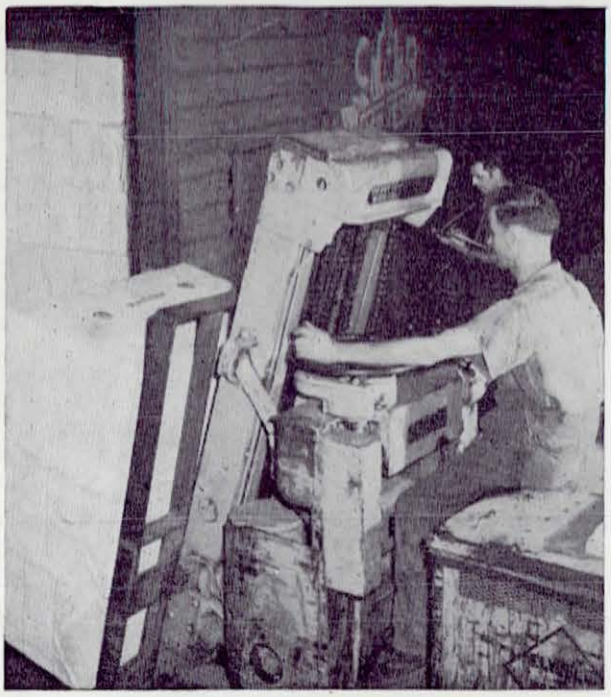
Southern Pacific—On November 1, a livestock special was established from El Paso, Tex., to Los Angeles, Cal., providing first-afternoon arrival for livestock destined to the Phoenix (Ariz.) district and arrival for early morning markets the third day at Los Angeles. The redesignation of through trains between Portland, Ore., and Los Angeles has permitted a marked improvement in the through handling of manifest and perishable traffic between these points. Palletized containers of 62 cu. ft. capacity are being used to a limited extent in l.c.l. operations, particularly where an intermediate transfer is required. Each container is equipped with a removable gate, on which is provided space for a tag indicating destination, so that transfer at intermediate stations can be accomplished quickly by mechanical or hydraulic-lift equipment. A reduction in loss and damage, as well as facilitated handling, are advantages accruing from the use of the containers.

1947..41,584
1946..38,755

During 1947 and the first few months of 1948, the (*Continued on page* 192)



Icing stations were enlarged and improved



Left—At a Canadian National station this electric fork truck is used to handle heavy shipments of paper, etc. The three packages on the truck could easily be made into a unit load by the use of some steel strapping and two pieces of scrap lumber. Right—Shown here is a good example of what can be done in making unit loads at little or no extra cost. Scene at Canadian National docks

MECHANICAL HANDLING OF FREIGHT WIDESPREAD

Use is rapidly growing of devices and equipment designed to cut loss and damage and move freight through stations at a faster pace

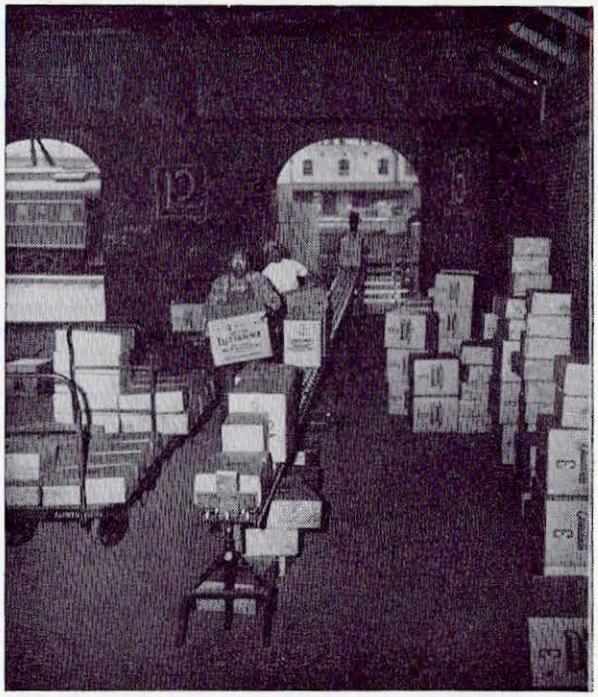
Mechanical handling of freight has as its objectives speedier and more economical movement, with less loss and damage. By and large the railroads have found that these objectives have been at least partially achieved, with loss and damage cut by 50 per cent in one case, while in another production in pounds handled per man-hour increased about 23 per cent in 14 months.

Though its liberal use is now the rule at the larger freight stations, rather than the exception, the full possibilities of mechanical handling are yet to be realized, since a much greater proportion of freight can be handled by mechanical means, i.e., by the use of the lift truck with the unit load. (By the term unit load is meant a group of one-man or smaller loads so put together that they can be handled at one time by a machine.) At present, for instance, less than one per cent of the freight accepted at stations in New York City is palletized or in some form for unit-load handling. That the railroads are widely able to handle unit loads is shown by the list of freight stations at which lift trucks are available, appearing in this issue.

Shippers find it profitable to take advantage of the full possibilities of the railroads' mechanical handling facilities. To do so they are exploring the feasibility of shipping more products in some form of unit load, which need not necessarily require the use of the pallet. Railroad man and many materials handling experts feel that the pallet, in whatever form it takes, is the *best* answer only to some freight-handling problems, not to all. For example, many products can be made into unit loads by the use of steel strapping, with sometimes a little scrap lumber added, or by the use of pallet glue. Many wooden containers, simply by the application of "runners" to one side of the container, thus allowing entry for the forks or platforms of trucks of the lift type, can easily and cheaply be made into a package that shipper, consignee and railroad alike can handle expeditiously by mechanical means.

L. C. L. Problem Serious

That mechanical handling of the unit load makes for lower loss and damage and for speedier handling is widely recognized. Application of this system to the handling of l.c.l. traffic—which accounts for about



Left—One of a fleet of thirteen lift trucks used by the Great Northern at its Vancouver, B. C. piers in the handling of pulp and newsprint shipments. Use of this equipment has resulted in halving, by weight, damage to these commodities. Right—Gravity conveyers of the type shown in this view of the New Orleans freight station of the L. & N. are only one of several designs that are helping the railroads to lessen the time required in handling freight at freight stations

2 per cent of the railroads' originating tonnage, but around 30-40 per cent of the loss and damage claims—is something that the individual roads, as well as the Association of American Railroads, are seeking to work out. In the main, the subject is being approached in two ways: (1) loading of freight on pallets or in some form of relatively small container for movement between stations in cars; and (2) loading of freight on pallets or skids, at car door or truck tailgate, for movement across platforms. The more times a package is manually handled the greater are its chances of being damaged or going astray.

Both Methods Effective

Because of the car shortage and other factors most railroads have used the second method, while continuing experiments on a smaller scale with the first one. The result has been faster movement over platforms and less loss and damage chargeable to handling at stations and transfers. The Northern Pacific, for instance, since installing mechanized equipment at one of its stations just before the end of the year 1946, raised the average pounds of freight handled per man per day during 1947 by 120 lb. from the 1946 average of 1,050. For the first two months of 1948 that average has increased by another 119 lb., to 1,289 lb. per man per day.

The Pennsylvania, as another example, uses at some of its larger stations the second method described above. At its West 12th Street station in New York eastbound freight is unloaded from cars and placed on pallets, which are hauled by tractor-trailer trains to areas on the pier. Here trailers are cut from the train and the pallets unloaded to the floor by fork trucks. The pallets are then lifted to the tail-gates of delivery trucks and the freight removed from them. *Thus at least two manual handlings are eliminated,* one of them being the lift to the tail-gate, heretofore a main source of damage to freight. Essentially the same operation may be seen at the Pennsylvania's Polk St., Chicago, station. The Santa Fe has also found that a similar system speeds its operations and cuts loss and damage. The Norfolk & Western, Erie, Union Pacific and others have likewise found the pallet-fork truck combination feasible and more economical than a hand trucking operation.

The Lackawanna, on the other hand, at several of its stations in the New York area, notably Hoboken, N. J., and Pier 41, North River, New York City, uses a live skid-platform lift truck operation. Freight is manually handled only twice in its trip from the truck to stowage in the car—once from the truck to the skid and again when it is actually placed in the car. Other roads use this system, but by and large use of the tractor-trailer train is more widespread, with freight sometimes being unloaded to the floor, especially when that freight is subject to pick-up by the consignee. This method has been worked out to a high point of efficiency by the Union Pacific, Illinois Central and others. The former road has found that in addition to fast handling and an avoidance of congestion this mass delivery at cars has helped stowers better to visualize their work, making for more uniform and proper loading, with less unmixed shipments which in turn result in less overs and shorts and a

Export freight palletized at car door for easier handling, by Lackawanna forces at the Hoboken Terminal Piers. Note the cartons of canned goods on the take-it or leave-it pallet at left of the picture. In center may be seen freight on a cheap and simple form of pallet

Freight being lifted from the take-it or leave-it pallet by fork truck with four forks. Note the five runners on top of this double-faced pallet and the type of load. Pallet is 48 in. by 48 in.

Freight being pushed off onto the floor of the boat for transfer to ships in the harbor. This process is worked in reverse for imported freight. Bagged material such as sugar, cement, etc. is also handled in this manner

more efficient unloading operation at destination station.

Too numerous to mention are the roads which use such devices as loud-speaker systems, microfilming of waybills, etc., as aids in handling their traffic. All indications are that these practices are finding ever wider acceptance. Conveyers, mainly of the gravity type, have been found useful in freighthouse operations by such roads as the Louisville & Nashville, Lehigh Valley, Missouri Pacific, Union Pacific and Erie. These roads find the gravity conveyer a saver both in time and in damage to freight. After much study the Monon is installing power conveyers at its Indianapolis station and these conveyors will extend from car to platform and will be large enough to handle most l.c.l.

I. C. "Trailerail" Service

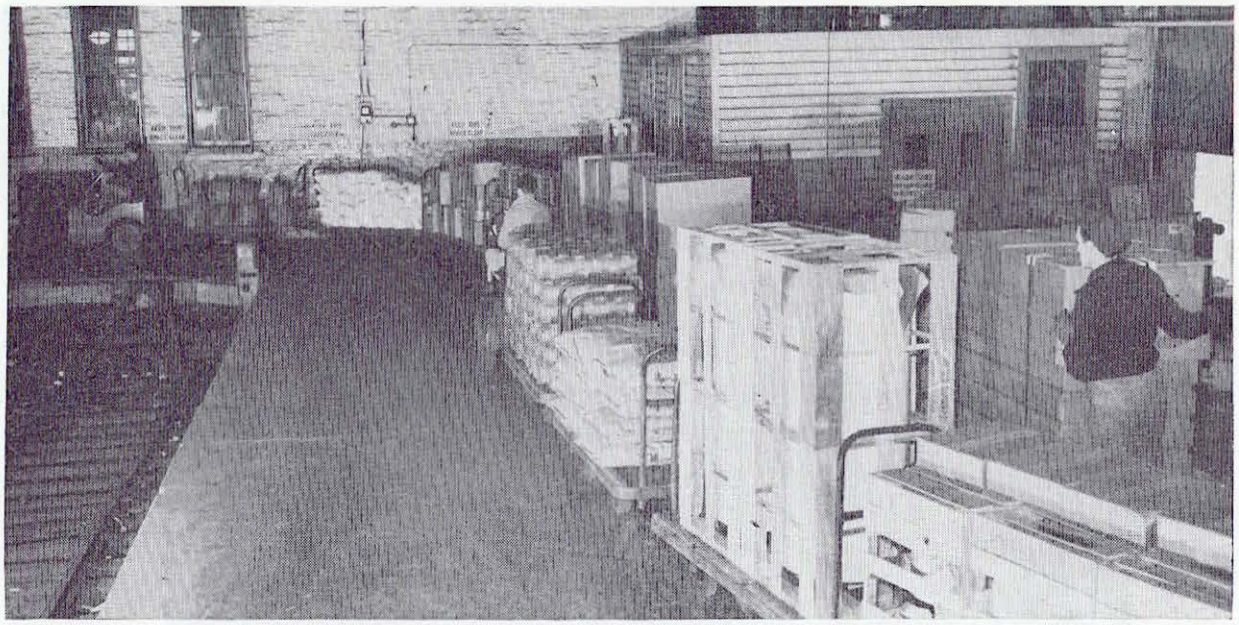
One form of mechanical handling recently adopted has been the use of the Reynolds "Trailerail" by the Illinois Central. (For details see *Railway Age* of January 31, 1948, page 49.) By this method all but two manual handlings are eliminated. To date loss and damage has been nil. Studies of the use of this equipment are under way on the Central of Georgia and other lines.

Palletization Experiments

The Chesapeake & Ohio has just begun an experiment in palletization of l.c.l. between three of its stations—Chicago, Cincinnati, Ohio, and Huntington, W. Va. The Southern Pacific is using palletized containers of 62 cu. ft. capacity to a limited extent in l.c.l. operations, particularly where an intermediate transfer of freight is required. Twenty of these containers can be placed in a regular 40-ft. car, with room left over in the car for long pieces of freight which will not fit into the containers. The containers are transferred between cars or between trucks and cars at stations or transfer points. This elimination of one or more intermediate handlings of the lading has made for a considerable reduction in loss and damage. The Pennsylvania, too, is considering building containers of a similar type, with modified specifications.

Import and Export Freight

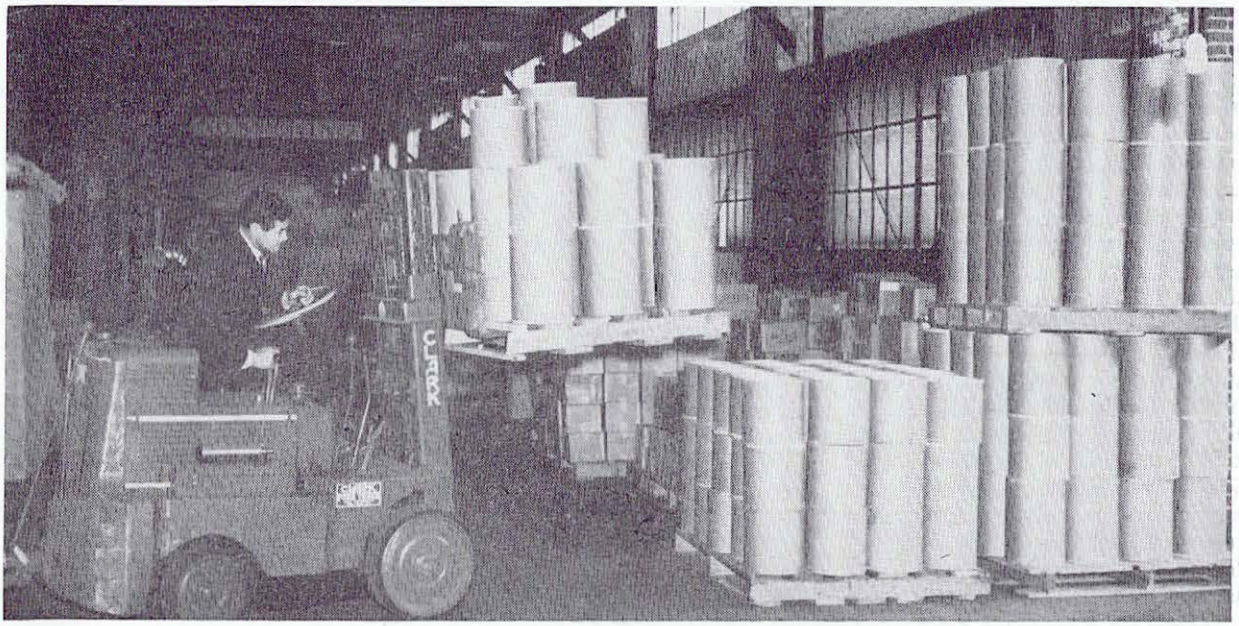
Packaged carload import or export freight is almost the only carload freight loaded or unloaded by the railroads themselves, with the exception of coal and ore at lake and ocean ports. In handling the package freight the use of the pallet and fork truck is widespread. The B. & O., C. of Ga., Erie, I. C., Lackawanna, Lehigh Valley, L. & N., New Haven, N. Y. C., P. R. R., So. Pac., U. P., Western Pacific, and others use them. The Lackawanna, at its Hoboken terminal piers, employs an unusual procedure in handling export freight which was adopted when shipowners did not cooperate in the return of pallets. By this method freight is manually handled only once by the railroad, either in the transfer from the car to the pallet or from the lighter to the pallet. Handling into storage, if necessary, or getting the freight from the pallet to the floor of the car or lighter is done by a fork truck



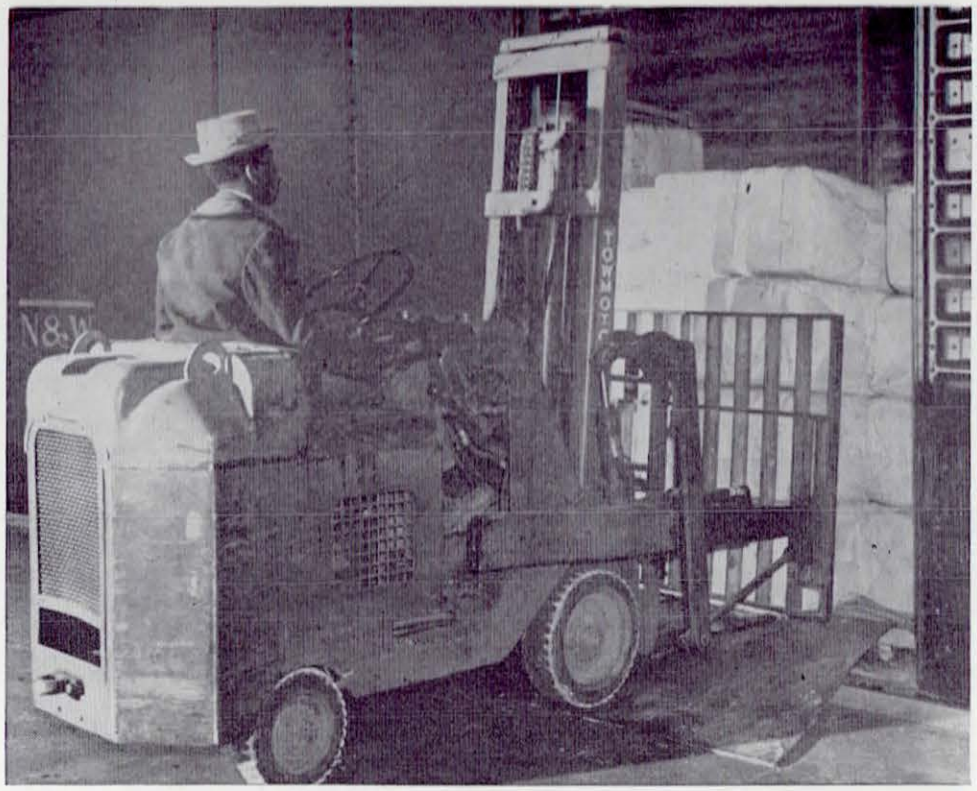
A tractor-trailer train en route to the stowing docks at the Omaha station of the U. P. Note the rubber-tired, roller bearing equipped trailers

with a pusher device. Operations are speeded beyond the wildest dreams of a decade ago. Other railroads use variations of this procedure. The Great Northern, a large handler of pulp and newsprint paper at its Vancouver, B.C., docks, uses a number of lift trucks. Handling by this means has resulted in a reduction of 50 per cent, by weight, in damage to the newsprint.

These are only a few instances to indicate the extent to which the railroads are striving to handle freight faster and more efficiently. Shipper cooperation in the past has helped solve many problems, and there is no question but that the cooperation of shippers and carriers in the more widespread mechanical handling of freight shipments will result in substantial savings for both.



Palletized section of the city delivery room of the U. P.'s station at Los Angeles. Freight palletized at the car door or at the truck tail-gate is one of the methods the U. P. and other roads are using to cut handling time and reduce loss and damage



Lift truck with pusher device in use at Pier "N" of the Norfolk & Western at Norfolk

RAILROADS SET TO HANDLE UNIT LOADS

Over 480 stations in the United States and Canada are equipped with lift trucks for handling palletized freight and other unit loads

The handling of freight by the lift truck-unit load method, including palletized freight, can be an important factor in cutting both loss and damage and other transportation costs, with savings to both carriers and shippers. This is considered in another article in this issue. The railroads' possession of facilities enabling them to accept unit loads makes possible also mechanical handling by both shipper and consignee of their shipments of l.c.l. and such carload freight as the railroads load and unload at their stations and piers.

For the convenience of shippers and railroads, the *Railway Age* has compiled the following list of 483 stations, transfers and piers at which lift trucks are available for handling unit loads. Forty-three states and 6 provinces of Canada are represented, as are all but 28 of the cities of the two countries having a population of over 100,000. Reports received from the railroads indicate that the coming year may see this list increase at least two-fold.

The tabulation indicates points where the railroads have specified that platform lift trucks are in use; otherwise fork trucks are generally available. Where no capacity or dimensions are included the shipper may check with the carrier concerned.

Station	Railroad	Max. Capy. lb.	Max. Dims. in.
ALABAMA			
Birmingham	Frisco		
	Southern	2,000	
Mobile	G.M.&O.	5,000	
Montgomery	A.&W.P.		
ARIZONA			
Phoenix	S.P.	4,000	
	A.T.&S.F.	4,000	
Tucson	S.P.	4,000	
Winslow	A.T.&S.F.	4,000	
ARKANSAS			
Fort Smith	M.P.	4,000	
CALIFORNIA			
Auburn	S.P.	4,000	
Bakersfield	S.P.	4,000	
	A.T.&S.F.	4,000	
Barstow	A.T.&S.F.	4,000	
Bieber	W.P.	4,000	
Eureka	Nw. P.	4,000	
Fernbridge	Nw. P.	4,000	
Fresno	S.P.	4,000	
	A.T.&S.F.	4,000	
Los Angeles	S.P.	4,000	
	A.T.&S.F.	4,000	
	U.P.		

Station	Railroad	Max. Capy. lb.	Max. Dims. in.
California (Cont.)			
Marysville	W.P.	4,000	
Modesto	S.P.	4,000	
Oakland	S.P.	4,000	
	W.P.	4,000	
Oroville	W.P.	4,000	
Placerville	S.P.	4,000	
Portola	W.P.	4,000	
Sacremento	W.P.	4,000	
	S.P.	4,000	
San Diego	A.T.&S.F.	4,000	
San Francisco	A.T.&S.F.	4,000	
	W.P.	4,000	
San Jose	S.P.	4,000	
	W.P.	4,000	
San Rafael	Nw. P.	4,000	
Stockton	A.T.&S.F.	4,000	
	S.P.	4,000	
	W.P.	4,000	
Suisun-Fairfield	S.P.	4,000	
Tracy	S.P.	4,000	
Ukiah	Nw. P.	4,000	
Willets	Nw. P.	4,000	
COLORADO			
Denver	D.&R.G.W.	4,000	50x44
	R.I.		
	U.P.		
	A.T.&S.F.	4,000	
La Junta	A.T.&S.F.	4,000	
Pueblo	A.T.&S.F.	4,000	
	D.&R.G.W.	4,000	50x44
CONNECTICUT			
Bridgeport	New Haven	4,000	
Cedar Hill Tfr.	New Haven	4,000	
DELAWARE			
Wilmington	P.R.R.		
DISTRICT OF COLUMBIA			
Washington	P.R.R.		
	B.&O.	5,000	24x54(b)
FLORIDA			
Miami	F.E.C.		
GEORGIA			
Atlanta	A.&W.P.		
	C. of Ga. (p)	4,000	
	Sou.	2,000	
Columbus	C. of Ga. (p)	4,000	
Macon	C. of Ga. (p)	4,000	
Savannah (piers)	C. of Ga.	6,000	
	A.C.L.	5,000	48x60
Waycross Trf.	A.C.L.	2,000	42x48
IDAHO			
Pocatello	U.P.		
ILLINOIS			
Chicago (Corwith)	A.T.&S.F.	4,000	
	C.&O.	4,000	
	C.&E.I.	8,000	
	C.B.&Q.	5,000	
	Erie (p)	5,000	48x70
	G.M.&O.	5,000	
(Polk St.)	P.R.R.		
(Halsted St).	P.R.R.		
(16th St.)	C.&N.W.	4,000	
	R.I.		
	Wab.	6,000	
	I.C.	4,000	
	N.Y.C.	6,000	
	Milw.		
(Galewood Tfr.)	Milw.		
	G.T.W.	4,000	
	Nickel Plate		
Decatur	Wab.	6,000	
E. St. Louis	B.&O. (p)	5,000	24x54(b)
	G.M.&O.	5,000	
	I.C.	4,000	
	P.R.R.		
	Wab.	6,000	
	N.Y.C.	4,000	
	Nickel Plate		
Galesburg	C.B.&Q.	4,000	
Joliet	A.T.&S.F.	4,000	
Morrison	C.&N.W.	2,000	
Streator	A.T.&S.F.	4,000	
INDIANA			
Anderson	P.R.R.		
Evansville	C.&E.I.	8,000	
Fort Wayne	P.R.R.		
	Nickel Plate		
Indianapolis	P.R.R.		
	N.Y.C.	4,000	

Station	Railroad	Max. Capy. lb.	Max. Dims. in.
Indiana (Cont.)			
Jeffersonville	P.R.R.		
Kokomo	P.R.R.		
Logansport	P.R.R.		
Mishawaka	G.T.W.	4,000	
Muncie	Nickel Plate		
South Bend	P.R.R.		
	G.T.W.	4,000	
IOWA			
Fort Madison	A.T.&S.F.	4,000	
Sioux City	G.N.	4,000	
KANSAS			
Atchison	A.T.&S.F.	4,000	
Dodge City	A.T.&S.F.	4,000	
Emporia	A.T.&S.F.	4,000	
Garden City	A.T.&S.F.	4,000	
Hutchinson	A.T.&S.F.	4,000	
Kansas City	S.L.-S.F.		
Newton	A.T.&S.F.	4,000	
Topeka	A.T.&S.F.	4,000	
Wichita	A.T.&S.F.	4,000	
	M.P.	4,000	
KENTUCKY			
Louisville	B.&O. (p)	5,000	27x54(b)
	P.R.R.		
	N.Y.C.	4,000	
LOUISIANA			
New Orleans (piers)	I.C.	4,000	
	L.&N.	4,000	
	K.C.S.-L.&A.	2,000	36x48
			45x45
			40x48
	Sou.	2,000	
Shreveport	K.C.S.-L.&A.	4,000	
MARYLAND			
Baltimore (Camden Sta.)	B.&O.	6,000	27x48(b)
(Canton Sta. Lighters)	P.R.R.		
(President Sta.)	P.R.R.		
Cumberland	B.&O.	6,000	27x48(b)
Hagerstown	P.R.R.		
Locust Point	B.&O.	6,000	42x34(b)
Port Covington	W.M.	6,500	48x72
MASSACHUSETTS			
Boston	N.Y.C.(B.&A.)	6,000	
Piers	New Haven	4,000	
Springfield	N.Y.C.(B.&A.)	4,000	
Worcester	N.Y.C.(B.&A.)	4,000	
MICHIGAN			
Alma	C.&O.(P.M.)	6,000	
Battle Creek	N.Y.C.	3,500	
	G.T.W.	4,000	
Big Rapids	P.R.R.		
	P.R.R.		
Detroit	C.&O.(P.M.)	6,000	
	Wab.	6,000	
	P.R.R.		
	N.Y.C.	6,000	
	G.T.W.	4,000	
Durand	G.T.W.	4,000	
Flint	C.&O.(P.M.)	6,000	
	G.T.W.	4,000	
Grand Rapids	C.&O.(P.M.)	6,000	
	P.R.R.		
	G.T.W.	4,000	
Jackson	N.Y.C.	4,000	
Kalamazoo	P.R.R.		
	G.T.W.	4,000	
Lansing	C.&O.(P.M.)	6,000	
	G.T.W.	4,000	
Mt. Clemens	G.T.W.	4,000	
Muskegon	C.&O.(P.M.)	6,000	
	G.T.W.	4,000	
Petoskey	P.R.R.		
Port Huron	G.T.W.	4,000	
Saginaw	C.&O.(P.M.)	6,000	
	G.T.W.	4,000	
St. Johns	G.T.W.	4,000	
Sturgis	P.R.R.		
Traverse City	P.R.R.		

(p)—Platform trucks, capable of handling unit loads of some types but no pallets.

(b)—The Baltimore & Ohio shows dimensions of forks or platforms of equipment at its stations.

Station	Railroad	Max. Capy. lb.	Max. Dims. in.
MINNESOTA			
Duluth	N.P.	4,000	
Minneapolis	N.P.	4,000	
	G.N.	4,000	
	R.I.		
	Milw.		
St. Cloud	G.N.	4,000	
St. Paul	G.N.	4,000	
	N.P.	4,000	
	Milw.		
Willmar	G.N.	4,000	
MISSISSIPPI			
Artesia	G.M.&O. (p)	2,500	
Meridian	G.M.&O. (p)	8,000	
MISSOURI			
Joplin	Frisco		
Kansas City	A.T.&S.F.	4,000	
	R.I.		
	M.P.	6,000	
	U.P.		
Springfield (Till st.)	Frisco		
(Chase St.)			
St. Louis (Broadway)	C.&E.I.	8,000	
	C.B.&Q.	5,000	
	Ill. Term. (p)		
(3 stations)	M.P.	4,000	
	St.L.S.W.	5,000	
(Broadway)	Frisco		
	Wab.	6,000	
MONTANA			
Billings	N.P.	4,000	
Butte	N.P.	4,000	
Great Falls	G.N.	4,000	
Harlowton	Milw.		
Havre	G.N.	4,000	
Helena	N.P.	4,000	
Missoula	N.P.	4,000	
NEBRASKA			
Omaha	C.B.&Q.	5,060	
NEVADA			
Elko	W.P.	4,000	
Las Vegas	A.T.&S.F.	4,000	
Reno	W.P.-S.P.	4,000	
Winnemucca	W.P.	4,000	
NEW JERSEY			
Camden	P.R.R.		
Croxton Trans.	Erie	5,000	48x70
Greenville Piers (Lighterage)	P.R.R.		
Hoboken City	D.L.&W.		
Hoboken Ter. Piers (Exp.)	D.L.&W.		
Jersey City Piers	P.R.R. (Lighterage)		
	L.V.		
Jersey City	Erie(p)	5,000	48x70
(lighterage)	C.N.J.	6,000	48x48(pallets)
	D.L.&W.		42x66
Newark	P.R.R.		
New Brunswick	P.R.R.		
Passaic	D.L.&W.		
Trenton	P.R.R.		
	Rdg.	6,000	
Weehawken (Frt. Sta.)	Erie	4,000	48x60
(Pier)		3,500(p)	48x48
	N.Y.C.	6,000	
NEW MEXICO			
Albuquerque	A.T.&S.F.	4,000	
Clovis	A.T.&S.F.	4,000	
Santa Fe	A.T.&S.F.	4,000	
NEW YORK			
Albany	D.&H.	6,000	
Binghamton	D.L.&W.		
	Erie	4,000	48x60
Brooklyn (Bushwick)	P.R.R.		
(N. 4th St.)	P.R.R.		
Buffalo	P.R.R.		
	D.L.&W.		
	Erie(p)	5,000	48x70
	Wab.	6,000	
	N.Y.C.	4,000	
	Nickel Plate		
Cobleskill	D.&H.	1,500	
Elmira	D.L.&W.		
	P.R.R.		
Hornell	Erie	3,500	48x48
Hudson Falls	D.&H.	3,500	
Jamestown	Erie(p)	5,000	48x70

Station	Railroad	Max. Capy. lb.	Max. Dims. in.
New York (Cont.)			
Little Falls	N.Y.C.	4,000	
Long Island City	P.R.R.		
Mechanicville	D.&H.	6,000	
New York City	P.R.R.		
Desbrosses St. (Piers 27-8-9)			
37th St.			
Piers 40, 49-50, 52	D.L.&W.		
Piers 13,41,68 North River, 26 East River	B.&O.		
Pier 22			
Pier 39(p)		6,000	36x42(b)
W. 26th St. (p)		5,000	24x54(b)
		5,000	24x54(b)
	Erie		
Pier 48		3,500	48x48
Duane St. (p)		6,000	48x72
W. 28th St. (p)		5,000	48x70
Pier 10, N. R.	C.N.J.	4,000	48x48
			42x66
	L.V.		
Piers 8,38,66 N. R.			
149th St. (Bronx)			
Export Piers	New Haven	4,000	
Pier 34	N.Y.C.		
		6,000	
Barclay St.		6,000	
St. John's Park		6,000	
33rd St.		6,000	
60th St.		6,000	
Olean	P.R.R.		
Rochester	P.R.R.		
	Erie (p)	5,000	48x70
	N.Y.C.	4,000	
Rome	N.Y.C.	6,000	
St. George Tfr.	B.&O.	6,000	36x42(b)
Troy	D.&H.	6,000	
Utica	N.Y.C.	3,500	
Watertown	N.Y.C.	4,000	
W. Hempstead	P.R.R.		
NORTH CAROLINA			
Durham	N.&W.	2,000	
Winston-Salem	N.&W.	2,000	
NORTH DAKOTA			
Fargo	G.N.	4,000	
	N.P.	4,000	
Grand Forks	G.N.	4,000	
Minot	G.N.	2,000	
OHIO			
Akron	P.R.R.		
	B.&O. (p)	6,000	27x60(b)
	Erie (p)	5,000	48x70
Alliance	P.R.R.		
Barberton	P.R.R.		
Brighton	B.&O. (p)	5,000	24x54(b)
Canton	P.R.R.		
Cincinnati	P.R.R.		
	C.&O.	4,000	
	Sou.	2,000	
	B.&O.	4,000	27x60(b)
	N.Y.C.	4,000	
Cleveland	B.&O.	4,000	27x48(b)
	Erie	6,000	48x72
(Davenport)	P.R.R.		
(Woodland Ave.)	P.R.R.		
	Nickel Plate	6,000	
	N.Y.C.	6,000	
Columbus	N.&W.	2,000	
	P.R.R.		
	B.&O. (p)	5,000	24x54(b)
	N.Y.C.	4,000	
Coshocton	P.R.R.		
Dayton	B.&O. (p)	5,000	24x54(b)
Elyria	N.Y.C.	4,000	
Hamilton	P.R.R.		
Ironton	N.&W.	2,000	
Lima	B.&O.	6,000	24x48
	P.R.R.		
Lorain	Nickel Plate		
Mansfield	P.R.R.		
Massilon	P.R.R.		
Portsmouth	N.&W.	2,000	
Springfield	N.Y.C.	4,000	
Steubenville	P.R.R.		
Toledo	Nickel Plate	3,500	
	P.R.R.		
	B.&O. (p)	5,000	24x54(b)
	N.Y.C.	6,000	
Warren	P.R.R.		
	Erie	6,000	48x72

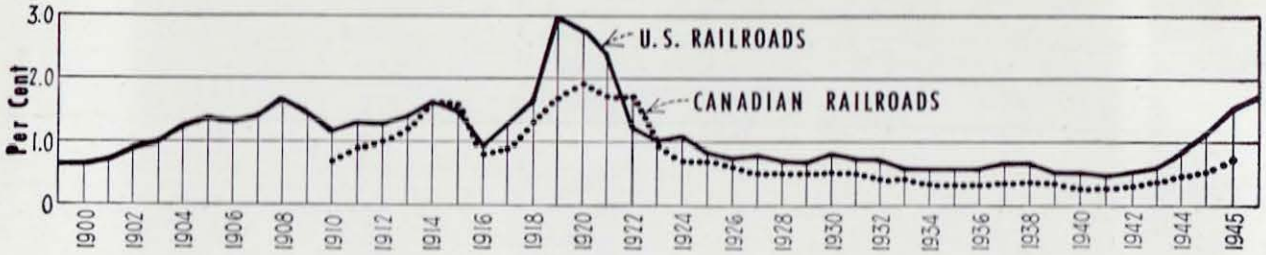
(p)—Platform trucks, capable of handling unit loads of some types but no pallets.

(b)—The Baltimore & Ohio shows dimensions of forks or platforms of equipment at its stations.

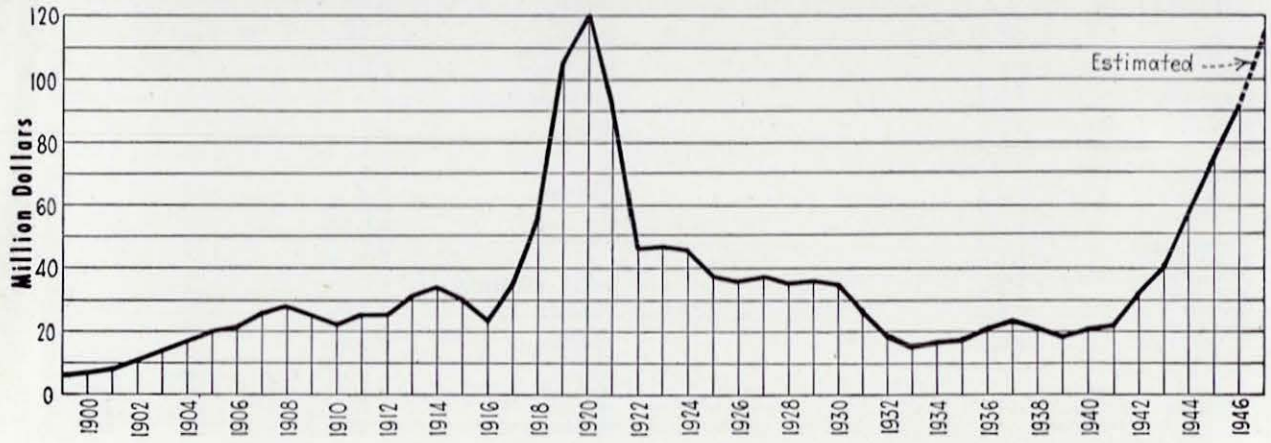
Station	Railroad	Max. Capy. lb.	Max. Dims. in.
Ohio (Cont.)			
Youngstown	P.R.R.		
	Erie	6,000	48x72
	B.&O.	4,000	27x60(b)
Zanesville	P.R.R.		
OKLAHOMA			
Oklohoma City	A.T.&S.F.	4,000	
Tulsa	Frisco		
Waynoka	A.T.&S.F.	4,000	
OREGON			
Portland	U.P.		
	S.P.	6,000	
	S.P.&S.	4,000	
PENNSYLVANIA			
Altoona	P.R.R.		
Beaver Falls	P.R.R.		
Bellefonte	P.R.R.		
Chambersburg	P.R.R.		
Coatesville	P.R.R.		
Downingtown	P.R.R.		
Economy	P.R.R.		
Erie	P.R.R.		
	Nickel Plate		
Harrisburg	P.R.R.		
Lancaster	P.R.R.		
Lebanon	P.R.R.		
	Rdg.	4,000	
Lewistown	P.R.R.		
Meadville	Erie	6,000	48x72
Newberry Jct. (Trf.)	Rdg.	4,000	
New Castle	P.R.R.		
Oil City	P.R.R.		
Pitcairn Trf.	P.R.R.		
Philadelphia	P.R.R.		
Phila. Tfr.			
So. Phila. Sta.			
Federal St. Sta.			
Produce Terminal			
Broad & Wash. Ave.			
31st & Chestnut Sts.			
Walnut St. Sta.			
Dock St. Sta.			
Shackamaxon Sta.			
Kensington Sta.			
Fairhill Sta.			
Ontario St. Sta.	Rdg.		
Willow & Noble St.		6,000	
Chestnut St. (Pier 8 So.)		6,000	
Wayne Jct. Tfr.		3,500	
Pier 24	B.&O.	4,000	48x20(b)
PPT (p)		5,000	24x54(b)
Race St. (p)		5,000	24x54(b)
Pittsburgh (Fed. St. & 11th St. Stas.)	P.R.R.		
	B.&O.	4,000	27x48(b)
	B.&O. (p)	5,000	24x54(b)
	N.Y.C.(P.&L.E.)	6,000	
Pottstown	P.R.R.		
Reading	P.R.R.		
(Tfr.)	Rdg.	6,000	
Scranton (Tfr.)	D.L.&W.		
Steelton	P.R.R.		
Stroudsburg	D.L.&W.		
Titusville	P.R.R.		
Uniontown	P.R.R.		
Warren	P.R.R.		
Washington	P.R.R.		
Wilkes-Barre	P.R.R.		
Williamsport	P.R.R.		
York	P.R.R.		
RHODE ISLAND			
Providence	New Haven	4,000	
SOUTH DAKOTA			
Sioux Falls	G.N.	4,000	
Watertown	G.N.	4,000	
TENNESSEE			
Memphis	I.C.	4,000	
	Frisco		
	Sou.	2,000	
TEXAS			
Amarillo	A.T.&S.F.	4,000	
Dallas	A.T.&S.F.	4,000	
	R.I.		
	St.L.S.W.	5,000	
El Paso	A.T.&S.F.	4,000	
Fort Worth	A.T.&S.F.	4,000	
	R.I.		
Galveston	A.T.&S.F.	4,000	
Houston	R.I.		
Lubbock	A.T.&S.F.	4,000	
Temple	A.T.&S.F.	4,000	

Station	Railroad	Max. Capy. lb.	Max. Dims. in.
UTAH			
Ogden	U.P.		
Salt Lake City	U.P.		
	W.P.	4,000	
	D.&R.G.W.	4,000	50x44
VIRGINIA			
Bedford	N.&W. (p)	2,000	
Bristol	N.&W.	2,000	
Lynchburg	N.&W.	2,000	
Martinsville	N.&W.	2,000	
Norfolk (Pier "S")	N.&W.	4,000	
(City Sta.)	N.&W.	4,000	
	Vgn.	4,000	48x48
Petersburg	N.&W.	2,000	
Pinner's Point	Sou.	2,000	
	A.C.L.	4,000	36x68
Pulaski	N.&W.	2,000	
Radford	N.&W.	2,000	
Roanoke	N.&W.	4,000	
Shenandoah	N.&W.	2,000	
Winchester	P.R.R.		
WASHINGTON			
Seattle	G.N.	4,000	
	Milw.		
	N.P.	4,000	
	U.P.		
Spokane	N.P.	4,000	
	G.N.	4,000	
	S.P.&S.	4,000	
Tacoma	G.N.	4,000	
	N.P.	4,000	
WEST VIRGINIA			
Bluefield	N.&W.	2,000	
	N.&W. (p)	6,000	
Huntington	C.&O.	4,000	
Mullens	Vgn. (p)	4,000	
Norton	N.&W.	2,000	
Parkersburg	B.&O. (p)	5,000	24x54(b)
Wheeling	B.&O. (p)	5,000	24x54(b)
Williamson	N.&W.	2,000	
WISCONSIN			
Milwaukee	Milw.		
	G.T.W.	4,000	
Superior	C.N.	4,000	
WYOMING			
Cheyenne	U.P.		
BRITISH COLUMBIA			
Vancouver (Docks)	G.N.	4,000	
(Frt. Sta. & Tfr.)	C.N.R.	4,000	
(Docks)	C.P.		
MANITOBA			
Winnipeg	C.N.R.	4,000	
NEW BRUNSWICK			
St. John (Ocean cargo piers)	C.N.R.	4,000	
W. St. John (winter)	C.P.		
NOVA SCOTIA			
Halifax (Ocean cargo piers)	C.N.R.	6,000	
ONTARIO, CANADA			
Cornwall†	C.N.R.	4,800	
Fort William	C.P.		
Guelph†	C.N.R.	5,000	
Kitchener†	C.N.R.	5,000	
London‡	C.N.R.	4,000	
Merritton†	C.N.R.	4,000	
Ottawa†	C.N.R.	5,000	
Peterboro†	C.N.R.	5,000	
Point Edward (Piers)	C.N.R.	6,000	
Port Arthur (Piers)	C.N.R.	6,000	
St. Catherines†	C.N.R.	2,500	
Stratford†	C.N.R.	5,000	
Toronto‡	C.N.R.	4,000	
	C.P.		
Windsor†	C.N.R.	5,000	
QUEBEC, CANADA			
Montreal (Wharf-sum.)	C.P.		
Ocean cargo piers	C.N.R.	6,000	
Frt. Sta. & Tfr.†	C.N.R.	5,000	
Place Viger Sta.	C.P.		
Quebec†	C.N.R.	5,000	

(p)—Platform trucks, capable of handling unit loads of some types but no pallets.
(†)—Skids or unit loads only, with minimum clearance of 9 in.
(‡)—Single faced pallets or other unit loads: no double faced pallets.
(b)—The Baltimore & Ohio shows dimensions of forks or platforms of equipment at its stations.



The all-important ratio of loss and damage payments to total freight revenue is again dangerously high. It is notable that the Canadian railroads, under conditions very similar to those of the United States, have been able to maintain a far more stable loss and damage ratio in recent years



Claims for loss and damage actually paid by the railroads in 1947 neared the all-time record of $120 million paid in 1919. Precipitous drop in claims payments following latter year shows effect of vigorous and concentrated prevention activities

CLASS "A" TRANSPORTATION PROBLEM—LOSS AND DAMAGE

It has been said, "A dollar saved in loss and damage is a dollar carried through to net income." One railroad is reported to have stated that it would have doubled its net income last year had it been able to cut its loss and damage in half.

The exact amount of loss and damage payments made by the railroads in 1947 was not available when this issue went to press, but it is estimated at about $115 million. This is not all that loss and damage cost. It is estimated that $10 million was spent in investigating and adjusting claims filed in 1947. The suspense account of claims paid, but unapportioned among the individual roads, is now more than $20 million. Prevention supervision, inspection and claims administration cost the railroads probably $2 million last year.

The individual shipper bears considerable cost in filing his claims—perhaps $2 per claim, including correspondence and cost of assembling supporting papers. Six million claims were filed in 1947, not including many cases of minor damage for which claims were not filed and which shippers themselves absorbed. Nor can additional shippers' losses in customer dissatisfaction and shortages of vital materials be reckoned in dollars.

"I have been ringing a lot of doorbells in the last year and a half. I have had this answer from a surprising number of people: 'Why should I pay you to design me a better box when, no matter what I take down to the railroads, if I can set it down on the loading platform in one piece, it is accepted by them—they guarantee delivery any place in the world!' "

—Remark of an officer of a private container testing laboratory on the West coast

What Shippers Are Doing

In their own interest shippers and receivers are active in the drive against this waste. Many concerns are now designing not only their packages but their products as well to meet specific transportation and plant handling conditions. The success of such measures is illustrated by the experience of a large mail order house, which has effected a 19 per cent reduc-

tion in total number of claims filed on household goods in the face of a 16 per cent increase in total sales volume; a 19 per cent cut on furniture—a troublesome item—although sales increased 22 per cent; and a 90 per cent reduction on lamps by packing them individually instead of in bulk.

The extraordinary extent of participation in the "Perfect Shipping Campaign" last month indicates how many allies the railroads have in their fight on loss and damage. The campaign was spearheaded by the National Management Committee, composed of active members of the regional shippers advisory boards. The National Industrial Traffic League gave the campaign strong support. Individual traffic clubs held forums and demonstrations.

Manufacturers and designers of containers were also more active than ever before. The Gummed Industries Association, for example, embarked on a campaign to teach the proper gluing of packages. The Fiber Products Association introduced a series of graphic loading and packing directions. The steel strapping manufacturers demonstrated widely the proper use of their products in securing loads and reducing the shock of transportation. A paper company published a series of handy booklets entitled "The Little Packaging Library."

Railroad Heavy Artillery

Steps which the railroads as a whole are taking to meet the loss and damage crisis are described in the article which follow this. A survey of the leading freight carriers reveals an extraordinary range and intensity of *individual* prevention activity. Space permits only a partial listing of the more unusual steps reported:

Atchison, Topeka & Santa Fe: Supervisor of freight claim prevention visited every yard on the system to conduct meetings on rough handling. This road is experimenting with the palletization of several types of l.c.l. Has increased number of transportation inspectors sufficiently to assign one to each operating division. Dynamic brakes on Diesel-electric freight locomotives reduce rough handling on the road. More and better car snubbers have been installed, and repair forces are giving special attention to draft gear.

Atlantic Coast Line: Better-handling committees discuss good railroading with yard crews, who are called between shifts. Freight handlers assemble twice monthly to talk safer freight handling.

Baltimore & Ohio: In 1947 instituted a "flying squadron" comprising three station inspectors, a mechanical man and a freight claim representative, respectively, which calls at all larger stations to analyze handling methods, recommend improvements and revisit and check accomplishment.

Chicago, Burlington & Quincy: Has increased its transportation inspection force from 9 to 16 men. Now has 44 "careful handling" committees.

Chicago, Indianapolis & Louisville: Created position of supervisor of merchandise service.

Canadian National: Uses "value boxes" in l.c.l. service for protection of small and valuable packages, and large open-crate containers for protection of uncrated commodities in merchandise service. Loans out a conveyor-type adhesive applicator for experimentation by shippers. Road has augmented its supply of impact recorders by installing two-way registers which indicate both vertical and horizontal shocks.

Canadian Pacific: Uses a special rack secured by steel strapping for light-loaded merchandise cars.

Chesapeake & Ohio: Has added a force of freight service supervisors. Uses bulkheads extensively. Road uses banding equipment at larger stations and new box cars are provided with slotted steel door posts to eliminate the necessity of anchoring bands to the sides of cars. All new box car equipment is provided with cushion draft gear.

Chicago & North Western: Road employs a container engineer to aid shippers.

Chicago, Milwaukee, St. Paul & Pacific: One to five claim prevention committees function on each operating division. Road keeps complete record of claims payments, segregating by origin stations, shippers and commodities, so that particularly troublesome movements can be isolated and investigated.

Delaware, Lackawanna & Western: Supervisors give special instruction to employees in groups of from six to 12. Use of bulkheads greatly expanded.

Delaware & Hudson: Has increased use of bulkheads for loading merchandise. Photographs of poor loading are mailed to originating freight stations.

Erie: In 1947 put in service 500 new box cars equipped with a special loading device, known as "Economy Safe-Load Cars," used for both l.c.l. and carload shipments. Has 700 additional cars on order.

Great Northern: Road has 800 bulkheads in service for l.c.l. cars plus 400 for forwarder cars.

Gulf, Mobile & Ohio: Has inaugurated a full claim prevention department.

Grand Trunk Western: Utilizes hinged "universal" bulkhead of own design for l.c.l. Employs four traveling claim prevention inspectors.

Illinois Central: Increasing use of bulkheads in l.c.l. cars. Mobile merchandise containers (see *Railway Age* of January 31, page 49) have demonstrated damage-free movement.

Louisville & Nashville: Has organized a special department, headed by a general superintendent, with necessary staff and field force to handle claim prevention.

New York Central: Maintains a loss and damage bureau with representatives at principal points. Road makes from 6,000 to 10,000 impact register tests a year. Service committees at principal freight stations present educational courses in good handling methods. Road has in preparation a special instruction car which will contain all modern equipment for visual education.

New York, New Haven & Hartford: Devoted entire issue of employees' magazine to freight claim prevention. Management offered $2,000 cash award prizes for suggestions as to how loss and damage can be reduced, first prize being $500. All principal stations equipped with flashbulb cameras. Road has designed and adopted a folding or hinged bulkhead for l.c.l.

Norfolk & Western: Better Service Organization active in loss and damage prevention. System Better Service Conference was attended by some 500 employees. Prevention personnel includes two full-time supervisors of loading and stowing.

Pennsylvania: At larger freight stations, assistant agents are assigned wholly or in part to prevention work. Use of bulkheads is increasing. It has 93 special merchandise cars with protective devices, which carry loads as high as 57 tons without damage. A special loss and damage prevention supervisor and qualified engineers assist shipper in packaging and loading problems.

Seaboard Air Line: Reduced claims payments on l.c.l. by $46,000 in 1947, despite increase in volume. Rough-handling committees are organized at all large terminals, with monthly meetings scheduled. System prevention committee represents all responsible departments.

Southern: System of matching "overs" and "shorts" expedites delivery.

Southern Pacific: Has developed a new-type container "for fast and efficient transportation of small items in l.c.l. service." Containers are equipped with skids for mechanical handling and can be loaded up to 2,500 lb. Twenty containers can be stowed in a typical box car with room to spare for loading long goods. Containers are particularly useful in coordinated truck service.

Texas & Pacific: Established claim prevention bureau in 1947, with three traveling inspectors and full-time supervisor of freight handling.

Toledo, Peoria & Western: Reports that Dieselization has reduced damage to freight by smoother starting and stopping.

Union Pacific: Staff of freight service inspectors covers entire railroad. Monthly meetings are held on every division to stress prevention activities. Road maintains container engineering department for shippers' aid. Bulkheads and segregation gates reduce l.c.l. loss and damage. Sixteen-page, illustrated booklet advises shippers how to use various types of packages.

Wabash: Equipping 50 new box cars with Evans loaders.

By A. L. GREEN
Special Representative,
Freight Claim Division, Association of American Railroads

HOW THE RAILROADS ARE FIGHTING LOSS AND DAMAGE

It is doubtful if there is any better way to present to shippers the story of the magnitude of loss and damage and the steps the railroads are taking to cut that loss than to reprint, in condensed form, this address presented before the Packaging Exposition of the American Management Association in Cleveland, Ohio, on April 27. Known widely among members of all of the 13 Shippers Advisory Boards and in railroad freight claim circles, and associated with the Freight Claim Division since its inception in 1920, Mr. Green has been called "Mr. Perfect Shipping" by a veteran writer on transportation affairs. When the American Management Association called him about "having something on loss and damage" at the Cleveland meeting, its representative said, "We just want a simple, straightforward story about what the railroads are doing to cope with this drain on revenues, and you're the man to do it."

Perhaps if we take our bearings, we can determine how far we have deviated from the true course of dependable transportation. If we are off course, what must be done to steer us in the right direction?

During the ten years ended with 1942, Class I railroads spent an average of 58.2 cents of each $100 of gross freight earnings to settle freight loss and damage claims; in 1947 they spent $1.70. But unless the effect of inflationary prices is deducted from the 1947 figure, the comparison has little significance. It seems fair to assume that average prices applicable to claims paid in the year 1947 were about 75 per cent higher than average prices prevailing in the ten years ended with 1942. Giving effect to that increase, the 1947 claim-to-revenue ratio would have been approximately 0.97 per cent, or 97 cents of each $100 of gross freight revenue—an increase of 67 per cent in the ratio over the base period 1933-1942. Applied to claims paid in 1948, at present price levels, the increase in the average claim payment attributable to higher values would be about 100 per cent over the base period.

Nevertheless, making full allowance for every factor beyond the carrier's control, the claim payment of an estimated $120 million for the year 1947 is a very large increase over the average of $19,567,046 for the ten years ended with 1942. Even in these days, $120 million is no inconsiderable sum. *It is equivalent to one-fourth of all the net earnings of all the railroads in 1947, and every railroad officer, from the president down, is deeply concerned about this situation.*

There was a similar problem which came with the first world war. Claims then, in the peak year, consumed $2.95 of each $100 of gross freight earnings—a huge bite—relatively almost twice as much as last year's loss. That problem was licked. This one can be.

Parallel with World War I

What are the elements that must be fought? In a large way the problem is a legacy of the war. In part, it comes from disruption of experienced forces of shippers, shipping-supply manufacturers and carriers.

Partly, it stems from a deterioration of shipping containers. And perhaps to some extent the problem is aggravated by a general attitude of unconcern. The problem is common to shippers, receivers and carriers, and cannot be solved unless tackled earnestly and efficiently by all three.

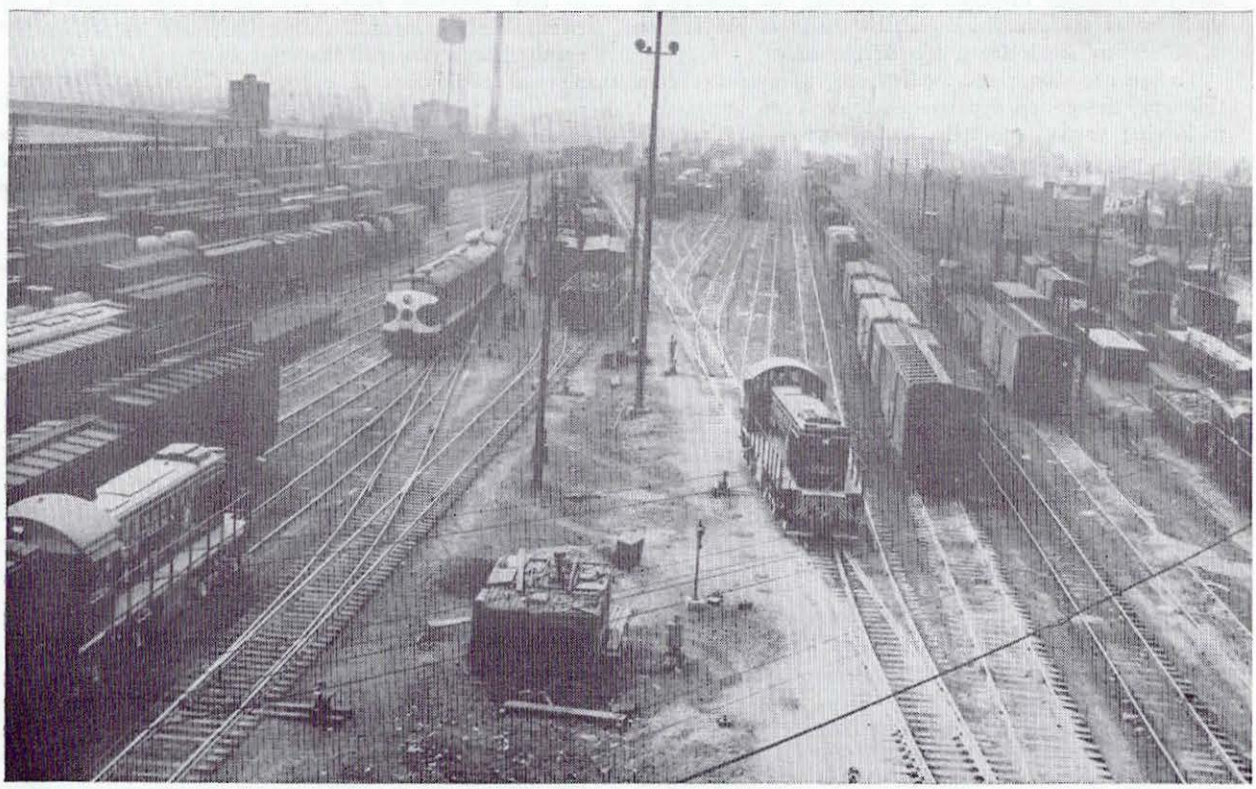
What does the service-rehabilitation program of the carriers look like? First, and closely linked to the Association of American Railroads' Freight Claim Division, are eight regional freight claim conferences, composed of claim officers of individual carriers, which meet periodically to discuss service and claim-causing problems common to the railroads. A main function of the claim conference is to originate, gather, distribute and promote the use of information about claim causes and their prevention.

Each conference has a loss and damage prevention committee. Questions of wider than local or regional experience are referred to the Freight Claim Division's National Freight Loss and Damage Prevention committee, composed of prevention officers selected territorially from 14 railroads and the Railway Express Agency. This committee meets quarterly with the headquarters staff of the division to evaluate the seriousness of specific causes and conditions, recommend corrective action, and, generally, to coordinate and assist the carriers in prosecuting their prevention work to best advantage.

Clearing House on Loss and Damage

The division's headquarters acts as a clearing house for receiving and circulating material designed to increase the effectiveness of the prevention effort among carriers, receivers, shippers, shipping container manufacturers, trade associations and others. Traveling representatives of the division, experienced in this work, investigate, in the field, a great variety of conditions resulting in claims or unsatisfactory service; develop practices making for improvement; confer with industry and carrier representatives; and make themselves generally useful to the national program. Monthly reports of claim payments—classified into chief causes and commodities—are furnished to the Freight Claim Division by member carriers. These reports are consolidated and printed semi-annually to assist carriers, classification committees and shippers in determining where the main corrective effort should be directed.

Since the first world war, and especially in recent years, police protection of railroad property and goods in transit has vastly improved. Greater care is exercised in hiring patrolmen with reference to the quali-



A good job in the yard, with a maximum coupling speed of 4 m.p.h., will eliminate damage due to shock

FURNITURE
FRAGILE
HANDLE WITH CARE
Light cartons crush when other freight is loaded on them . . . . stow where they will carry safely

Furniture is biggest claim producer; railroads meet problem with educational efforts

ties they must possess to make proficient policemen; recruits are most thoroughly trained in their duties; and the methods followed in detecting the sources of theft losses and conditions which tempt employees or outsiders to steal are fully developed.

To secure increased safety of shipments from thievery, the police departments have been persuasive in having yards, terminals, freighthouses—in fact, all places where cars need protection—flood-lighted, or otherwise lighted at night. Diesel operation likewise has its effect. Trains are kept rolling; there are not so many slow-downs for stiff grades or at water tanks; thieves cannot hop on. Losses of freight, due to all causes, were cut from about $44 million for the peak claim year of 1920, to about $19 million for the year 1947. Far less still, by comparison, were losses clearly traceable to the depredations of thieves.

[Mr. Green then described those research and improvement projects of mechanical and engineering departments of the railroads which affect loss and damage. Other articles in this issue cover these fields in detail.—Editor.]

Weighing and Inspection Bureaus

If there is any part of the prevention job in which the weighing and inspection bureaus are not engaged, it cannot now be recalled. The bureaus apply the "Mullen" or bursting test to fiber boxes, advising shipper and box-maker whether boxes meet the requirements of the Consolidated Freight Classification. If they do not comply, shippers know that rate penalties are in order. If the box is of better test and workmanship than that guaranteed in the box-maker's certificate, the shipper knows he is getting a really good deal from his box supplier; i.e., in so far as a bursting test is a criterion of quality. About 85 per cent of all merchandise is packed in fiber boxes. These tests show a marked improvement in the fiber box in the past few months, but there is still a great deal of damage, running into many millions of dollars annually, due apparently to boxes and inner fittings of inferior quality.

The records of the inspection bureaus (and of the railroads, too) furnish a resounding answer to the question asked by shippers so often, "Why don't you refuse improperly packed shipments?" Shippers are our customers. The policy of the railroads is to give their customers every consideration. Poorly packed or incorrectly packed shipments are not refused arbitrarily. When they are discovered, however, the shipper is courteously informed of the condition, and asked if he wants to take the goods back, so his customer will be spared the disappointment of a damaged shipment. This works like a charm—very rarely does a shipper "turn the cold shoulder" to a friendly approach which is clearly for his welfare. Many, many thousands of packages are taken back by shippers for repacking or correction of marking errors.

Safe Handling of Explosives

The Bureau of Explosives can present a commendable record in the handling of explosives and other dangerous articles. During 1947, no persons were killed or injured in connection therewith, although available data indicated that the commercial production of explosives for industrial uses far exceeded that of any previous year. The year 1947 marked the twenty-sixth consecutive one in which no explosions resulted from the rail transportation of Class A commercial explosives. The total reported property loss resulting from the transportation of explosives of all kinds, including fireworks and ammunition, was less than $500 and less than one-tenth per cent of the property loss resulting from the transportation of dangerous articles of all kinds.

Furniture exceeds all other articles as a claim producer. Its handling and loading in cars must be watched with extra care. Traveling representatives of the inspection bureaus and of the principal furniture-carrying railroads make the rounds of furniture manufacturing areas and factories, explaining and demonstrating the new and more protective methods of packing furniture recently published in the Freight Classification. The importance of a clear understanding of, and compliance with, these specifications may be judged from the fact that claims paid for furniture loss and damage last year are estimated at $10 million, an increase of about 58 per cent over 1946.

Individual Road Programs

Probably of greater effectiveness than all group activities of the carriers put together is the prevention work done by the individual railroad on its own line. Here is where the effects of improper packing, marking, and loading are seen, and, in the case of switching, sometimes heard! No railroad can be said to have the

"best plan" for producing trouble-free service, nor do any two railroads proceed along exactly the same lines. All are alert to the need for knocking out claim causes wherever they raise their heads. Each road has a specially equipped staff, headed by the freight claim agent or an officer responsible for prevention activities. Where the volume of business warrants, men trained in the best packaging and shipping practices, as well as the proper handling of freight and cars, are stationed at strategic points, often being responsible for results on a division or a grand operating division of the road. Other experts travel out of the main office. The duties of these specialists include everything that contributes to good or bad service.

Excessive switching impact is one of the main causes of damage. Realizing that proper, skillful switching is a result of method, training and supervision, the prevention and operating departments are giving a great deal of attention to all phases of this problem. Illustrated folders and posters aimed at raising morale and skill, pocket speed cards explaining how coupling speed can be judged more accurately, speed tests, careful switching committees who visit yards and discuss the matter with the men, and other measures are followed to impress upon engineers, switchmen and yardmasters that they have a great deal at stake, personally, in running a good railroad.

Right now, a sound-motion training film, in colors, produced by the Freight Claim Division, is being shown to yardmen throughout the country. It is being moved in instruction cars and in specially prepared automobiles from yard to yard over entire railroads. The film uses typical instances of damage to freight to illustrate the effects of over-speed impact. It seeks to give the men a better understanding of what they are expected to do; why it is necessary for them to do the work in a certain way; and how to get results on the jobs they perform. We have tried to slant the picture to the employee's individual interest—through improved yard efficiency—in doing the job as well as it can be done.

Impact Recorders

In addition to the training of yardmen, approximately 1,000 impact recorders are used by carriers to register the degree of impact shock that enters car and contents in switching and train operations. Time and location of shock are revealed by a tape synchronized to a clock. When the tape shows damaging impacts, the crew responsible is identified and corrective action is taken. Where overspeed impacts occur repeatedly in certain yards, the operating department concentrates remedial effort upon such points.

In many freight stations, committees composed of station employees meet periodically to discuss station operation, methods, failures, etc. Over, short and damage reports are studied, analyzed and tabulated to disclose the commodities, handling and stowage practices which result in heaviest claim losses. A number of railroads record their claim payments so as to produce a current record of the claim-cost per car originating with each principal shipper on the line. Where high claim rates develop, a practical man or a container engineer visits the shipper to lend assistance in solving the problem.

Frequent inspections of loading methods are made at freight stations to see that heavy freight is loaded on the floor and that oil, paint, agricultural implements and similar commodities are separated from other freight exposed to damage therefrom. Railroads have increased the use of bulkheads (which are most effective in reducing the crushing effects of heavy loads) in merchandise cars and seek to insure the leveling off of loads before cars are forwarded.

Effect of Mechanization

Modern mechanized equipment is supplied whenever handling costs and damage can be cut by this means. At one point where mechanized equipment was installed, the tonnage handled per man-hour went up about 9 per cent, and loss and damage reports on outbound loadings, per ton, were cut 36 per cent. At another point. labor efficiency improved 10.5 per cent, and tons handled without loss and damage exceptions increased 118 per cent.

On some railroads, division loss and damage prevention committees, composed of the division superintendent as chairman, master mechanic, road foreman of engines, general yardmaster, trainmaster, traveling auditor, division engineer, superintendent of police, division freight agent and other interested officers as members, meet periodically to thresh out loss and damage problems.

Articles illustrating examples of the effects of good and bad handling practices are published frequently in employee magazines of individual roads, often accentuated by a message from the president of the road, urging employees, in their own interest, to perform their daily duties in a way to reflect credit upon rail operations.

Cameras Tell the Tale

A number of railroads offer cash awards for the best ideas submitted by employees to increase efficiency and savings in all departments. In one instance, $2,000 in prizes were awarded for the best suggestions on loss and damage reduction.

The practice of taking pictures of the results of faulty packaging, loading and other deficiencies creating claims has become quite common. These pictures are used in reporting such cases to shippers or to the carrier agency responsible. So often a picture tells the story better than a report.

Some roads appoint committees of interested departments, which tour the entire railroad investigating, discussing, and reporting on all features of the operation bearing upon cause and prevention. Team play is emphasized.

Without the cooperation of shippers individually, shipping-supply manufacturers, the Regional Shippers Advisory Boards, the National Industrial Traffic League, the American Management Association, the many trade groups and traffic and trade publications, the real, solid achievement of the railroads in holding down loss and damage—even to the present high figure—could not possibly have been accomplished. In hundreds of instances, loss and damage problems have been partly or wholly solved independently of the carriers.

S-T-R-E-T-C-H-I-N-G CARS

Good shipping and good railroading must supplement car-building if goods are to get where they are going; present ease in supply is temporary

HOW A ZEALOUS SHIPPER FEELS

"Dear Sir:

"I had intended to attend the advisory board meeting on the 10th, but cancelled my reservations this morning due to the fact that other personnel of my office are compelled to be absent and I just cannot get away.

"It certainly hurts my pride to think (name of city) has not made a better showing in car efficiency in the past. The ribbing that I have been getting from some of our neighboring cities about (name of city)'s poor showing has caused me to resolve that we are going to do our best to improve our standing.

"One of the first things I want to do is to revise and revive the committee and then have a general meeting here of the committee, hoping to revive the interest of all our (name of city) shippers in the matter of car efficiency.

"Again, I regret that I cannot be with you, but I hope to see you soon.

Yours very truly,"
A TRAFFIC MANAGER

It seems strange that in this, the third year after the war's end, shippers should still be giving their time to "vigilance" and "car efficiency" committees; that almost everyone with, or hoping to be with, the government is trumpeting for punitive per diem, federal direction of car service or other panaceas; and that the railroads are still arguing among themselves as to who is "hogging the cars" and how much should be paid for their use. Be the causes what they may, it is a good thing that the people actually engaged in transportation are aroused and at grips with the problem. What is a "tight situation" could be a true crisis—a breakdown perhaps—if shippers were not, on the whole, dealing efficiently with freight cars at their loading docks and the carriers grinding out, day after day, basic good utilization of plant and rolling stock.

Homing Cars During Ease-Up

Perhaps the most significant trend in recent months has been the temporary ease in the shortage of cars—especially box cars—due, it is said, to grain hold-backs, price and market uncertainties, material shortages, a gain in net balance of new cars over retirements, the coal strike and, to a limited extent, the weather.

During the first 11 weeks of 1948 (before the start of the coal strike) the average daily shortage of freight cars was 10,915, compared with one of 27,553 cars during the first 11 weeks of 1947. Loadings in the first 16 weeks of the year thus far have shown heavy decreases in grain and grain products, livestock and coal, and substantial decreases in forest products and merchandise.

Good advantage has been taken of this ease-up by the railroads to get cars home so they can be properly repaired and up-graded. Why and how shippers should aid in observing Car Service Rules toward this end are explained in a message by a manager of the Car Service Division which follows this summary.

Most observers agree that the ease in the car supply is temporary and that there will undoubtedly be a substantial shortage in the fall peak, though, it is hoped, not as severe as that experienced last year. It is likely that the chief tightness this year will be in open-tops and tank cars. With respect to gondolas, the building of new cars has persistently failed to match retirements, even during recent months; industrial activity—especially steel—has grown constantly; and industry has expanded rapidly in the West and Southwest, where ownership of this type of car has hitherto been relatively small.

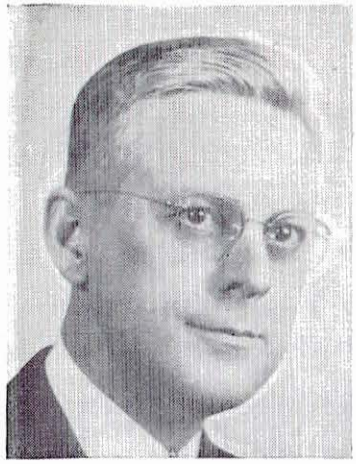
The carriers are continuing intensive activities toward speeding up car handling. Station supervisory forces and transportation inspection staffs have been enlarged. At least one road has publicized a "Speed Up" bureau, composed of freight traffic and operating officers directed to take every measure to accelerate loading and unloading, expedite repairs and cut detention at yards. Stores forces are being alerted to the need for speedy release of cars carrying company material. Mechanization of freighthouses and increase in the number of "overhead" cars are reducing the number of car-days in merchandise service.

Advisory Boards Demonstrate Value

During the depression the suggestion was made that the regional shippers advisory boards be disbanded because, having been formed in a period of acute car shortage and congestion, they were unnecessary in a period of car surplus and transportation glut. Such a move would have been tragic. Keeping the boards together not only insured continued close relations between shipper and carrier, so that they possessed the machinery with which to deal with the problems of World War II, but demonstrated that there are more things than shortages upon which carrier and customer can deal together—such, for example, as cleaning debris from cars made empty, haulage of dunnage, reduction of loss and damage, and the mutual fight on government meddling.

Some of the boards—which have been called "transportation insurance"—this year celebrate their twenty-fifth anniversary with a record membership and record extent and intensity of activity. Total membership of the 13 boards was 24,193 on September 1, 1947, a gain of 1,402 over the total for the previous year. The estimates made by the commodity committees of the organizations continue to serve as the main source of

(*Continued on page* 196)



WHY PUSH RETURN TO CAR SERVICE RULES?

By RALPH E. CLARK
Manager, Closed Car Section,
Car Service Division, A.A.R.

The history of Car Service Rules is a long one. The establishment of the free interchange of cars between all railroads in the United States, Canada and Mexico called immediate attention to the necessity for a code of Car Service Rules to govern the handling and interchange of freight cars between the railroads. The first such code was adopted effective January 1, 1893.

Following World War I, the railroads, in anticipation of the termination of federal control and in recognition of the serious dislocation of cars in relation to ownership, not only promulgated a revised code of Car Service Rules, which became effective March 1, 1920, but also created what is now known as the Car Service Division, which began functioning upon the return of the railroads to private operation.

The Important Trio

The Car Service Rules were devised as the best means of regulation of car distribution and interchange in times of normal demand and reasonably adequate car supply. The primary object of the rules is to provide for the automatic and orderly return of cars to the owning (home) road. The purpose and application of three of the most important rules are:

Rule 1 provides that home cars shall not be used for the movement of traffic beyond the limits of the owner road when other suitable cars are available. The purpose of this rule is to avoid unnecessary and uneconomical movement of cars by requiring each road to use available foreign cars for off-line loading rather than forward them empty in parallel movement with loaded cars of the home road's ownership.

Rule 2 provides for the handling of cars owned by direct connections and requires that they shall be loaded to or via the home roads, or, if moved empty, they shall be forwarded to the home road at the nearest junction point with such road. An important feature provides that cars which are made empty at a junction point with the home road shall be delivered to the home road at that point either loaded or empty. This rule is particularly effective in returning freight cars to the owning railroad.

Rule 3 deals with cars owned by railroads which are not direct connections of the railroad on which the cars are located. If loading is available for such cars to or in the direction of the home road, they must, under this rule, be used for such loading, or they may be backhauled empty on the holding railroad if loading is there available to or in the direction of the home road. If such loading is not available, the cars must be returned empty to the road from which received and thus they are started on their way to the home road via the service route. Such cars may be intercepted anywhere in this home route movement for loading in accordance with the rules.

World War II set off a five-year period during which the relationship between the demand for transportation and the available car supply grew more and more distorted because of an unusually high demand and a continually diminishing car supply. With these conditions existing it was not practical nor economical for railroads or shippers to observe fully Car Service Rules without seriously delaying traffic movements and interrupting railroad service. Consequently, the usual rules observance was not possible during this period, and it was not until early in 1947 that the subject again became prominent.

Progress is being made. Since the program of relocating freight car equipment on home roads through a better observance of Car Service Rules was inaugurated in March, 1947, the number of cars on home roads has increased by 186,194 cars of all types, including 51,802 box cars.

However, we still have a long way to go to get back to the prewar level, when approximately three-fourths of the total freight car supply and two-thirds of the box car supply were located on home roads. About 487,000 fewer cars of all types and 310,000 fewer box cars were on home roads as of April 1, 1948, than were so located eight years ago, using present ownership as a base.

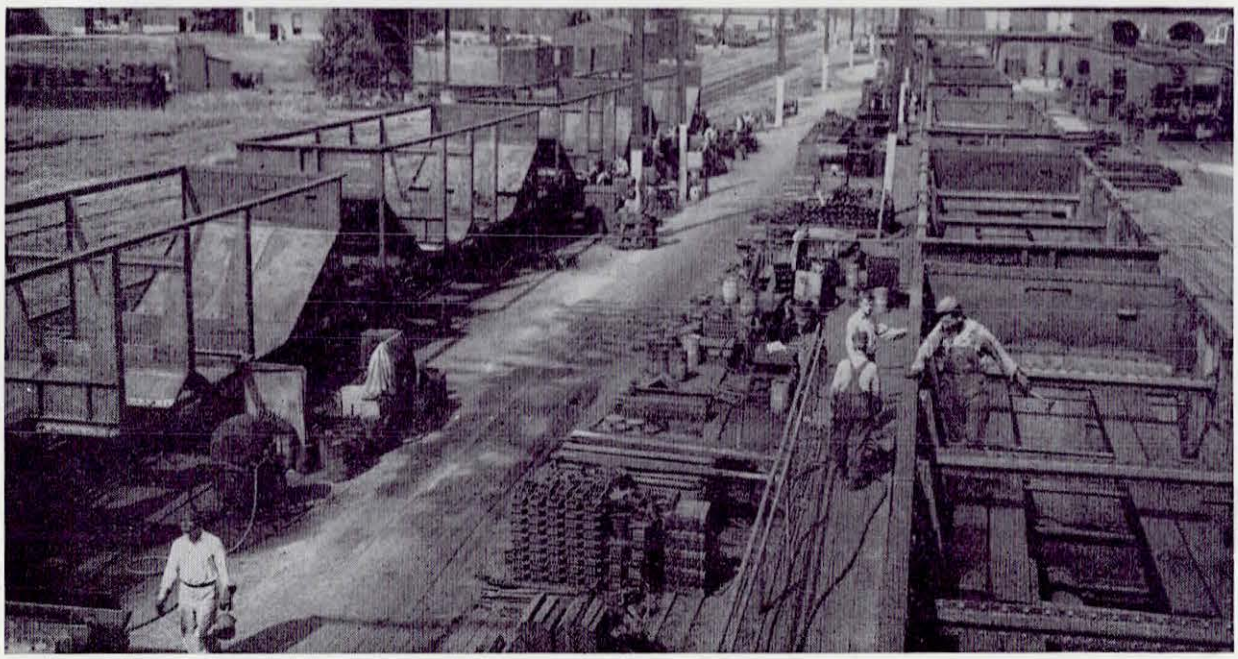
War Distorted Relationship

The record traffic of the past six years and the impact of wartime conditions have brought about vast changes in the regular channels of movement and cars have become greatly dislocated in relation to ownership. This dislocation has been further aggravated by reason of the forced relaxation in the observance of Car Service Rules. As a result of all these factors, cars "get home" less often than ever before and many needed repairs have gone unattended. Therefore, the relocation of cars to home roads is one of the biggest tasks ahead. In only the past few months has the receipt of new cars exceeded the retirement of old and worn-out cars.

We are once again approaching the season of peak traffic demands. There will be heavy demands from all sections of the country for all types of cars and it is believed that a sincere and wholehearted endeavor by railroads and shippers alike to comply with the code of Car Service Rules will assist greatly in meeting these demands and in bringing about a more satisfactory transportation situation for everyone. Shippers and railroads alike have a real stake in this important objective.

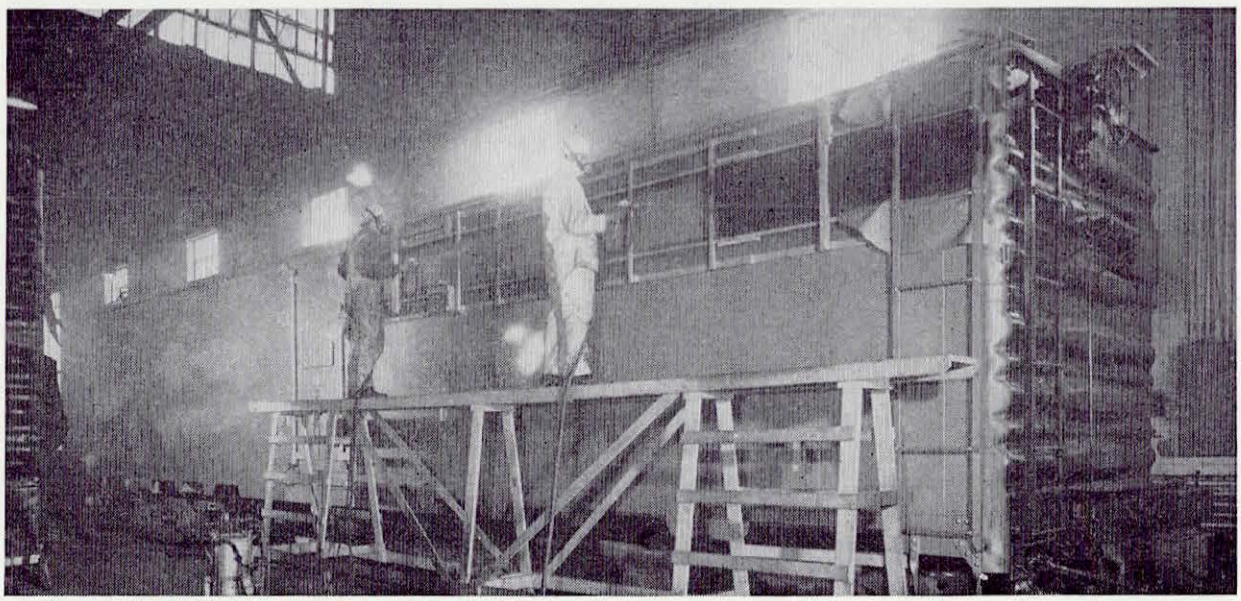
FREIGHT-CAR SUPPLY INCREASING

Despite the failure to reach the 10,000 monthly goal, production for five months has exceeded retirements at a rate of about 30,000 cars a year



Bad order freight cars ranged from 4 to 4.9 per cent of the total cars on line—5 per cent for one reporting period—during 1947. From 4.3 on January 1, 1948, they reached 4.9 on March 15 and were 4.8 on April 1

Despite many disappointments, the production of freight cars reached 9,823 in December and has exceeded 9,000 in each of two months of the first four of 1948



Car supply during 1947 and so far in 1948 has been the source of a constant succession of disappointments and the inspiration for a magnificent job of car utilization. Starting 1947 with a program calling for a total output of 7,000 new freight cars a month from contract car builders and railway shops—increased to 10,000 cars a month beginning with June—production exceeded 7,000 cars for the first time in September and has never yet reached the 10,000-car objective.

Four months of 1948 have now passed and December, 1947, with an output of 9,823 new cars, still holds the record. In the meantime, the backlog of cars on order and undelivered has increased. On January 1 it stood at 119,786; on May 1, at 134,176.

Little as it is, there is one crumb of satisfaction in the situation. For five months—from November to March, inclusive—and probably for April, more cars have been installed than have been retired. The increase of cars owned by Class I railroads from November 1, 1947, to March 1, 1948, is 12,876. If this rate of net increase holds, there will be about 30,000 more cars in service next October than were available in October, 1947.

But the hope persists that ultimately the output of new freight cars may reach the goal of 10,000 a month. The winter, which slowed up everything, exerted its influence on steel deliveries and car production. The coal strike, now over, also exerted its influence on steel production. For the five weeks ended April 3 to May 1, inclusive, the operating rate of the steel industry dropped from a preceding weekly output averaging over 1,700,000 tons of ingots and castings to less than 1,500,000 tons. The operating rate has since returned to the pre-strike normal. The loss during that period amounts to approximately two thirds of a week's output, which probably represents, roughly, the effect of the coal strike on overall steel output. Whatever influence this may have on the availability of steel for the building of new freight cars, it will scarcely be reflected in car output until June and July.

10,000 Cars a Month

The record of car production during the ten months since the program for the construction of 10,000 new freight cars monthly was supposed to go into effect raises a question as to whether there is any real prospect of attaining an output of 10,000 new cars a month. It is true that for one month an output within about 180 cars of the goal was reached, and for each of two other months more than 9,000 cars were built. But in 10 months the goal has not once been reached.

A target of perhaps 11,000 or 12,000 new cars a month might result in a minimum monthly output of 10,000 cars. Car production on a country-wide basis is a complex process involving many plants, contract and railroad-operated, a considerable number of car types, and many variations in specifications, particularly with respect to specialties. To satisfy the demands of such a program all the varieties of steel and parts manufactured from steel must be available in exactly balanced amounts and in exactly the right spot at the right time to meet production schedules in which the numbers of cars of the various types change from month to month.

Unless larger inventories are available than those represented by a lead time of two months between rolling of the steel and completion of the cars, failures in balance of amounts of materials may cause loss of car-shop production which cannot be made up and, in the end, result in corresponding cancellations of steel orders. These are reasons why one may be skeptical as to the regular attainment of a 10,000-car monthly production, unless quotas for that target include a cushion of surplus materials.

But was not the promise held out late last year of a minimum program of 14,000 cars a month? Raising the target of freight-car production from 10,000 cars a month to a minimum of 14,000 cars a month, and resort to allocation of steel if adequate supplies could not be delivered under the voluntary arrangements then in effect, were the recommendations of a committee in a report to President Truman last November. At a press conference at the end of January, Secretary of Commerce Harriman, chairman of that committee, said that studies were being conducted by the government and an advisory committee representing a number of steel companies to determine whether the freight-car program could be stepped up beyond 10,000 new cars a month without causing undue damage to three other industry programs, namely, housing, farm machinery, and petroleum equipment. These also are of high priority caliber. Up to now that is the end of 14,000-car-a-month program.

Utilization

The plan of voluntary cooperation worked out by Col. J. Monroe Johnson, director of the Office of Defense Transportation, remained in effect from March 31, 1947, when the priority powers of the Civilian Production Administration expired, until Public Law 395, enacted at the end of last December, became effective. This statute was passed to protect those who entered into a cooperative agreement for the allocation of steel for the freight-car construction and repair program against prosecution under the anti-trust laws. A number of objections were raised to some of the administrative provisions for "voluntary" cooperation under the statute which were proposed by the Office of Industry Cooperation of the Department of Commerce. The reporting provisions, against which some of the objections were raised, were ameliorated after a public hearing held at Washington on March 19, and there was a steady influx of notices of compliance to the O.I.C. throughout April. As of April 28 these included 116 of the 134 railroads participating in the informal plan and high percentages of the contract car builders and component manufacturers. All of the 32 steel producers have signed.

Despite the severe shortages of freight cars which prevailed through much of 1947 and which will continue to be experienced during 1948, there has been

a continuance of the shipper-railroad cooperation which was so effective during the war. This, as during the war, was supplemented by O.D.T. orders, by Car Service Division regulations affecting the movement of cars, and by the efforts of individual railroads to save car-days.

The average carload continues high. For 1947 it was 32.6 tons, which was slightly better than for the first two months of 1948. It compares with 28.5 in 1941, the last prewar year. Car-miles per car-day averaged 45.7, which was up from 1946 but below 1942 to 1945, inclusive. It compares with 40.6 in 1941. Net ton-miles per car-day averaged 990 for the year.

This is a slight increase over 1946 but is less than 1943 to 1945, inclusive, each of which was over 1,000. It compares with 740 for 1941.

Despite the long weekends effective in industry since the war, the average turn-around time during 1947 showed a distinct improvement from that of the preceding year. The average for 1946 was 17.78 days. It did not exceed 15 during the first 10 months of 1947 and for three months of that time it was less than 13. For the first quarter of 1948 it ran over 15 days, a result which, no doubt, reflects the effects of the severe winter and the coal strike.

The accompanying table is a compilation by *Railway Age* of the freight cars on order May 1 and shows purchasers, quantities and types of cars and the builders. The total number of freight cars reported as on order and undelivered to domestic railways and private car lines by the American Railway Car Institute on May 1 was 134,176. (See General News columns for car orders and production figures for April.)

Freight-Train Cars on Order for Domestic Service May 1, 1948

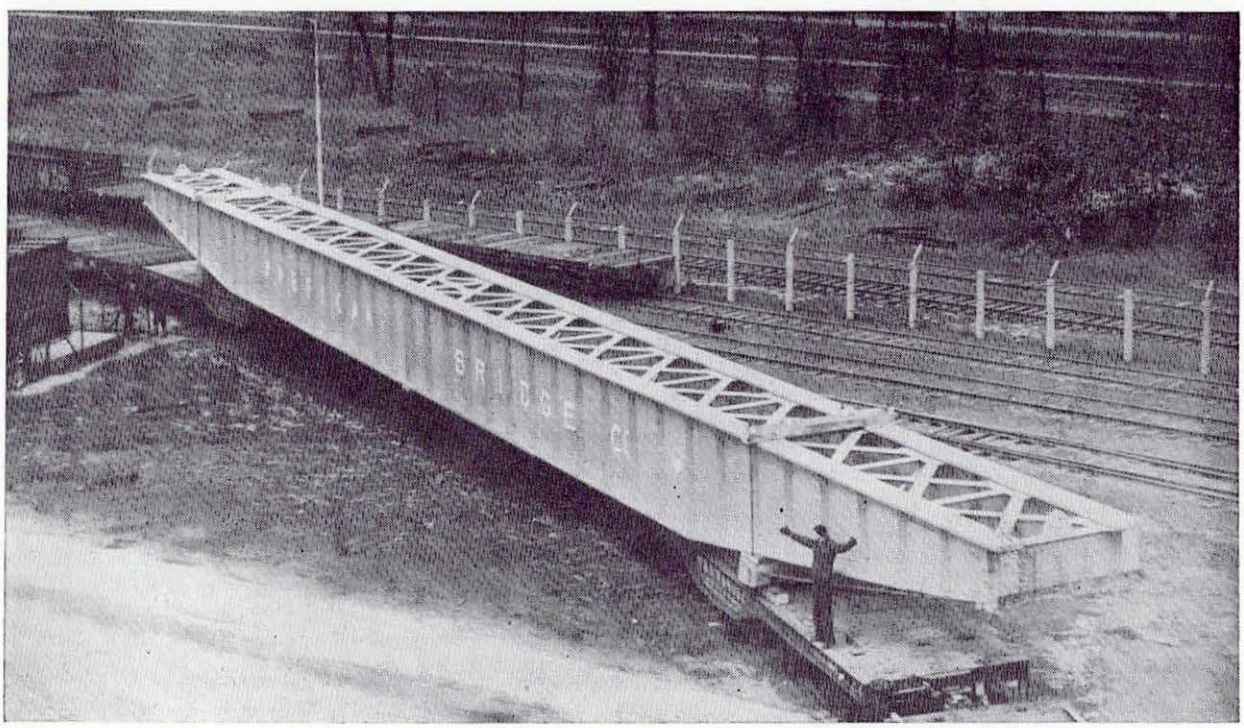
Railroads

Purchaser	No.	Type	Capacity (tons)	Builder
Atchison, Topeka & Santa Fe	125	Cov. Hopper	70	Amer. Car & Fdy.
	250	Hop. Bal.	70	Amer. Car & Fdy.
	250	Gondola	70	Amer. Car & Fdy.
	750	Gondola	70	Amer. Car & Fdy.
	200	Tr. Hopper	70	Amer. Car & Fdy.
	200	Cov. Hopper	70	General American
	250	Tank	70	General American
	100	Gondola	70	Pressed Steel
	300	Gondola	50	Pullman-Standard
	914	Box	50	R.R. Shops
	200	Caboose	..	R.R. Shops
Atlanta & West Point	20	Hopper	50	Pullman-Standard
Atlantic Coast Line	1,000	Hopper	50	Amer. Car & Fdy.
	100	Phosphate	70	Amer. Car & Fdy.
	60	Cov. Hopper	70	Amer. Car & Fdy.
	1,800	Box	50	Amer. Car & Fdy.
	200	Pulpwood	50	Amer. Car & Fdy.
	800	Gondola	50	Pullman-Standard
Baltimore & Ohio	1,000	Hopper	70	Bethlehem Steel
	500	Cov. Hopper	70	Greenville
	1,000	Hopper	70	Pressed Steel
	1,500	Hopper	70	Pullman-Standard
Birmingham Southern	128	Hopper	70	Pullman-Standard
Carbon County	300	Hopper	70	Pullman-Standard
Central of Pennsylvania	8	Cov. Hopper	70	R.R. Shops
Chesapeake & Ohio	150	Caboose	30	Amer. Car & Fdy.
	5,749	Tr. Hopper	70	Amer. Car & Fdy.
	1,000	Hopper	70	General American
	1,000	Hopper	70	Bethlehem Steel
	999	Gondola	50	Pressed Steel
	200	Auto	50	Pressed Steel
	562	Cov. Hopper	70	Ralston
Chicago & Eastern Illinois	25	Flat	50	Amer. Car & Fdy.
	200	Box	50	Amer. Car & Fdy.
	15	Gondola	70	Pressed Steel
Chicago & Illinois Midl.	400	Gondola	70	Pullman-Standard
Chicago & North Western	1,000	Box	50	Amer. Car & Fdy.
	500	Gondola	70	Bethlehem Steel
	50	Gondola	70	Pressed Steel
	650	Hopper	70	Pullman-Standard
	1,000	Box	50	Pullman-Standard
Chicago & Western Ind.	50	Hopper	70	General American
Chicago, Burlington & Quincy	1,100	Box	50	R. R. Shops
	500	Hopper	70	R.R. Shops
	500	Stock	40	R.R. Shops
	300	Flat	50	R.R. Shops
	150	Cov. Hopper	70	R.R. Shops
	250	Ballast	70	R.R. Shops
	200	Tank	70	R.R. Shops
	50	Gondola	70	R.R. Shops
Chicago Great Western	10	Gondola	70	Pressed Steel
Chicago Heights Term.	25	Cov. Hopper	70	General American
Chicago, Indianapolis & Louisville.....	100	Hopper	70	General American
	50	Gondola	70	Greenville
	300	Gondola	50	Pullman-Standard
Chicago, Milwaukee, St. Paul & Pacific	250	Cov. Hopper	70	General American
	850	Hopper	50	Pressed Steel
	300	Logging	..	R.R. Shops
	3,622	Box	50	R.R. Shops
	2,010	Gondola	50	R.R. Shops
Chicago, Rock Island & Pacific	500	Tr. Hopper	70	Amer. Car & Fdy.
	1,000	Box	50	Pullman-Standard
Chicago, St. Paul, Minneapolis & Omaha	150	Gondola	70	Bethlehem Steel
	400	Box	50	Amer. Car & Fdy.
Clinchfield	1,000	Hopper	50	Amer. Car & Fdy.
	6	Caboose	30	Intern'l Ry. Car
Copper Range	15	Box	50	Pullman-Standard
Delaware & Hudson	150	Box	40	R.R. Shops
	150	Hopper	50	R.R. Shops

Purchaser	No.	Type	Capacity (tons)	Builder
Denver & Rio Grande Western	15	Tank	50	General American
	500	Gondola	50	Pressed Steel
	50	Gondola	70	Pressed Steel
	250	Gondola	70	Pullman-Standard
	100	Stock	40	R.R. Shops
Delaware, Lackawanna & Western	500	Box	50	Amer. Car & Fdy.
Detroit & Mackinac	25	Hopper	50	General American
	10	Cov. Hopper	70	General American
Detroit & Toledo Shore Line	100	Cov. Hopper	70	General American
Detroit Toledo & Ironton	300	Box	50	Amer. Car & Fdy.
	100	Cov. Hopper	70	Amer. Car & Fdy.
	50	Hopper	70	Greenville
	18	Caboose	40	Intern'l Ry. Car
Donora Southern	20	Tr. Hopper	70	Greenville
Duluth, Missabe & Iron Range	440	Ore	70	Amer. Car & Fdy.
	1,000	Ore	70	General American
	460	Ore	70	Pullman-Standard
	1,140	Ore	70	Pullman-Standard
Elgin, Joliet & Eastern	100	Gondola	70	Greenville
	500	Box	50	Magor
Erie	1,000	Hopper	50	Amer. Car & Fdy.
	700	Box	50	Amer. Car & Fdy.
	100	Cov. Hopper	70	Ralston
Georgia	75	Hopper	50	Pullman-Standard
Great Northern	75	Cov. Hopper	70	Amer. Car & Fdy.
	200	Gondola	50	Amer. Car & Fdy.
	1,512	Box	50	R.R. Shops
Gulf, Mobile & Ohio	300	Box	50	Amer. Car & Fdy.
	50	Cov. Hopper	70	Amer. Car & Fdy.
	100	Gondola	50	Amer. Car & Fdy.
	50	Gondola	70	Pressed Steel
Illinois Central	500	Hopper	50	Amer. Car & Fdy.
	1,067	Hopper	50	General American
	25	Gondola	70	Pressed Steel
	1,000	Hopper	50	Pullman-Standard
	1,500	Hopper	50	R.R. Shops
	1,430	Box	50	R.R. Shops
Illinois Terminal.....	300	Box	50	Amer. Car & Fdy.
Kansas City Southern	100	Cov. Hopper	70	General American
	500	Gondola	70	Pullman-Standard
Lake Superior & Ishpeming	200	Ore	70	Bethlehem Steel
Lehigh & Hudson River	20	Cov. Hopper	70	Central of Pa.
Lehigh & New England	100	Cov. Hopper	70	Amer. Car & Fdy
Louisville & Nashville	637	Hopper	50	Amer. Car & Fdy.
	200	Gondola	70	Pressed Steel
	4,848	Hopper	50	Pullman-Standard
Minn., St. P. & S.S. M.	200	Gondola	50	R.R. Shops
Missouri-Illinois	100	Hopper	70	R.R. Shops
Missouri-Kansas-Texas	200	Tr. Hopper	70	Amer. Car & Fdy.
	300	Box	40	Amer. Car & Fdy.
	120	Gondola	70	R.R. Shops
Missouri Pacific	1,000	Hopper	70	R.R. Shops
	1,000	Gondola	50	R.R. Shops
	55	Caboose	..	R.R. Shops
Monongahela Connecting	100	Gondola	70	Amer. Car & Fdy.
Nash., Chatt. & St. L.	50	Gondola	70	Pressed Steel
New Jersey, Indiana & Illinois	100	Auto Box	50	Pressed Steel
New York Central	691	Box	55	Amer. Car & Fdy.
	93	Box	50	Pullman-Standard
	2,970	Hopper	55	R.R. Shops
	1,000	Box	55	R.R. Shops
	500	Gondola	70	R.R. Shops
New York, Chicago & St. Louis	400	Gondola	70	Amer. Car & Fdy
New York, New Haven & Hartford	42	Caboose	30	Intern'l Ry. Co.
	832	Box	50	Pullman-Standard

FREIGHT-TRAIN CARS ON ORDER (Cont.)

Purchaser	No.	Type	Capacity (tons)	Builder
New York, Susquehanna & Western	10	Caboose	30	Intern'l Ry. Car
Norfolk & Western	1,575	Hopper	70	R.R. Shops
	100	Cov. Hopper	70	Greenville
Northern Pacific	250	Ballast	70	Amer. Car & Fdy.
	70	Tank	70	General American
	500	Box	50	R.R. Shops
	206	Flat	50	R.R. Shops
Pennsylvania	450	Box	50	R.R. Shops
	2,000	Gondola	70	R.R. Shops
	300	Cov. Hopper	70	R.R. Shops
Pittsburgh & Lake Erie	1,000	Hopper	70	Greenville
	1,000	Hopper	55	R.R. Shops
	1,000	Box	55	R.R. Shops
	500	Gondola	70	R.R. Shops
Pittsburgh & West Virginia	25	Cov. Hopper	70	Greenville
Port Huron & Detroit	2	Caboose	30	Intern'l Ry. Car
Reading	1,000	Box	50	Amer. Car & Fdy.
	1,000	Hopper	50	Bethlehem Steel
St. Louis & O'Fallon	30	Hopper	50	R.R. Shops
St. Louis-San Francisco	434	Hopper	50	Pressed Steel
	50	Gondola	70	Pressed Steel
	300	Box	50	Pullman-Standard
	500	Hopper	55	Pullman-Standard
St. Louis Southwestern	50	Cov. Hopper	70	Amer. Car & Fdy.
Savannah & Atlanta	50	Box. Bod.	50	Pullman-Standard
Seaboard Air Line	400	Gondola	50	Amer. Car & Fdy.
	123	Hopper	70	Bethlehem Steel
	500	Auto	50	Pressed Steel
	500	Box	50	Pullman-Standard
Southern Pacific	1,479	Box	50	Amer. Car & Fdy.
	2,550	Flat	70	Amer. Car & Fdy.
	350	Cov. Hopper	70	Amer. Car & Fdy.
	600	Flat	50	Amer. Car & Fdy.
	700	Gondola	50	Amer. Car & Fdy.
	1,650	Gondola	50	Bethlehem Steel
	100	Cov. Hopper	70	General American
	1,000	Gondola	50	General American
	293	Gondola	50	Pressed Steel
	3,350	Box	50	Pullman-Standard
Southern	1,000	Hopper	50	Amer. Car & Fdy.
	2,827	Box	50	Pullman-Standard
Spokane, Portland & Seattle	500	Box	50	Northern Pacific
Tennessee Central	100	Hopper	50	Amer. Car & Fdy.
Term. R.R. of St. Louis	14	Caboose	30	Intern'l Ry. Car
Union Pacific.....	400	Cov. Hopper	70	General American
	1,950	Hopper	70	Pressed Steel
	1,600	Box	50	Pullman-Standard
Virginian	500	Gondola	55	R.R. Shops
	885	Hopper	55	R.R. Shops
Wabash	500	Box	50	Amer. Car & Fdy.
	50	Gondola	70	Pressed Steel
	61	Auto	50	Pressed Steel
	200	Hopper	55	R.R. Shops
	491	Box	50	R.R. Shops
	20	Caboose	..	R.R. Shops
Western Maryland	901	Hopper	55	Bethlehem
Western of Alabama	30	Hopper	50	Pullman-Standard
Wheeling & Lake Erie	500	Gondola	70	Amer. Car & Fdy.
	500	Gondola	50	Bethlehem
	12	Cov. Hopper	70	General American
	1,834	Hopper	70	Ralston
Private Car Lines				
Amer. Refrig. Transit	900	Refrig.	40	General American
	200	Refrig.	40	Mo. Pac. Shops
Armour.....	1,000	Refrig.	40	Amer. Car & Fdy.
	1,000	Refrig.	40	General American
Cudahy Packing.....	189	Refrig.	40	Co. Shops
Fruit Growers Express	500	Refrig.	40	Pacific Car & Fdy.
	1,000	Refrig.	50	Co. Shops
	1,340	Refrig.	40	Co. Shops
	224	Refrig.	..	Co. Shops
Mather Stock Car....	129	Refrig.	40	Co. Shops
Merchants Despatch	847	Refrig.	40	Co. Shops
Pacific Fruit Express	145	Refrig.	40	Amer. Car & Fdy.
	3,000	Refrig.	40	Co. Shops
St. Louis Refrigerator	100	Refrig.	40	Co. Shops..
Western Fruit Express	400	Refrig.	40	Amer. Car & Fdy.
Wilson	71	Refrig.	40	Co. Shops
Not available	2	Flat	80	Amer. Car & Fdy.
	15	Gondola	70	Amer. Car & Fdy.
	54	Tr. Hopper	70	Amer. Car & Fdy.
	85	Cov. Hopper	..	Amer. Car & Fdy.
	4,703	Tank	..	Amer. Car & Fdy.
	65	Flat	70	Bethlehem Steel
	60	Slab	75	Bethlehem Steel
	78	Cov. Hopper	..	General American
	500	Refrig.	40	General American
	30	Spec. Flat	90	General American
	3,388	Tank	..	General American
	49	Gondola	70	Pressed Steel
	10	Box	50	Pressed Steel
	15	Tr. Hopper	70	Pressed Steel
	2,000	Box	50	Pullman-Standard
	5	Hopper	50	Pullman-Standard
	30	Tr. Hopper	70	Greenville
	2	Hopper	70	Ralston



LONG SHOP-FABRICATED GIRDER SPAN—Shown above is one of the largest deck-girder spans ever fabricated and shipped as a unit by the American Bridge Company, U. S. Steel Corporation subsidiary. This span, which is 162 ft. long, 8 ft. high, 9 ft. wide, and weighs 150 tons, was shipped on five flat cars. It was built for use on the Chicago & North Western over the Sheboygan river, near Sheboygan, Wis.

Railroads are combating careless merchandise handling with educational programs to inculcate proper methods of stowing and trucking

L. C. L.—"HUSSY" OF THE RAILROAD BUSINESS

Less-carload traffic is the phase of the railroad business most talked about by shippers, it seems; and, at the same time, it is the one with which they are the least satisfied. This "hussy" of railroad traffic is costly to the roads, yet cannot be sloughed off. Even if the railroads do everything possible to discourage its movement, they, as the basic common carriers, would always be left the undesirable "dregs" by the trucks and forwarders, and would, therefore, have to maintain expensive facilities for a shrunken volume.

If the railroads cannot get out of the business, they ought to try to put it on a profitable basis by winning back the "cream." With such an aim, shippers could hardly disagree.

The Fight on Costs

Merchandise traffic has the curious characteristic of being unprofitable under two widely differing sets of circumstances. Whenever its volume is so low that utilization of facilities is inadequate, it loses money—as in the depression, when many railroads rented freighthouse space to draymen and forwarders. It also loses money when volume is so high that it swamps facilities. The latter situation, plus especially high increases in station force wages and decreases in output, has pushed merchandise business into its present plight of excessive cost.

One way to meet the situation is to apply a kind of arbitrary rate which will reflect the distinct cost of terminal handling. This has been done for many years by European roads, but has long been unpopular here. The petition filed a year ago by railroads in Official territory for drastic increases in l.c.l. and any-quantity rates, still pending before the Interstate Commerce Commission, embodies, in essence, a similar aim. The proposal contemplates that the minimum rate would be 50 per cent of first class, in addition to which there would be increases ranging from 110 per cent for distances of 5 mi. or less to 10 per cent for hauls of 600 mi. or more. Thus terminal cost would be covered more fully by the receipts from short-haul traffic—for which it is as great as for long haul—or the short-haul business would be driven from the rails.

One eastern railroad experimented recently with placement of its merchandise business "on its own," as a division of the company charged with making a profit, in which extensive innovation was not forbidden. The experiment has been discontinued, but possibly more because of overall changes in management policy than because the experiment *per se* was regarded as a failure.

A more positive attack on high costs is that of of cutting them by modernization and changed operating procedures. Installation of mechanical freight handling equipment and redesigning of freighthouses to accommodate it are among the most lively developments on the current railroad scene. Expansion of this equipment, it is held, will cut costs, speed up movement and reduce damage to lading.

Reduction of freight loss and damage will do much to restore the profitability of thin business, since claims payments thereon are grossly out of proportion.

Toward Improved Service

The attitude of shippers toward l.c.l. service indicates that it is far more important than its tonnage or revenues would indicate. It is obvious that, because there moves in merchandise service so large a proportion of retail goods, spare parts, etc., and because more shippers have contact with this phase of the railroad business than with carload traffic, good service in this field is vital. It is unfortunate, therefore, that l.c.l. movement suffers most from the impact of congestion and inflated costs.

Despite widespread complaints, there exists a core of reasonably satisfactory merchandise service between key points where one-line hauls are involved. This has

improved somewhat during the past year, especially by the expansion of overnight "hot shot" runs.

It is in interline shipments that delays are the worst. L.c.l. shipments involving more than one road constitute from 75 to 80 per cent of the total; hence closer relations between the carriers in decreasing transfers and crosstown movement by greatly expanding the use of through or overhead cars are a "must," if general improvement is to be effected. In this connection there is need for more uniform and frequent publication of through car schedules, shippers say, so that they will know which interline routes to use.

The Office of Defense Transportation found during the war that providing shippers with fairly complete merchandise schedules of all through cars in the country gave them a valuable aid to judgment in speeding up their shipments and at the same time helped the railroads avoid congestion.

The operation of more through cars and closer relations between the roads are examples of the identity of good service and reduced cost—from which both carrier and customer will benefit. They will also help eliminate an outstanding weakness in the existing operation—i.e., that indifferent service by one railroad outweighs the good performance of many others.

Dealing with Congestion

To deal with the congestion that has characterized freighthouses and transfers in recent years, many railroads are working their houses on Sundays — at punitive rates—to get cars unloaded and released, but, since many plants are closed on Saturday as well as Sunday, the freight piles up on the floor, and by Monday 2½ days' work is on hand. At large transfers some roads have experimented with labor camps to insure an adequate supply of platform help, a few of them finding it feasible to use available maintenance-of-way camp cars. Incentive pay has also been used with widely varying success, depending upon local union policies, location of the facility, type and seniority of labor, and the class of freight handled.

There is no doubt that piece-work methods, in whole or in part, increase per-man output substantially and, if properly policed, cut down sloppy loading. But it is difficult to reconcile the bases of payments among individual stations, and the wide variety of freight in merchandise channels makes for inequities. Mechanization may prove to be as effective a producer, without incurring such perplexing administrative difficulties. It has been said that the pride a man takes in being given a piece of real machinery to master and husband, in place of the lowly hand truck to push around, adds immeasurably to the machine's inherent productivity.

Long-term radical changes in the handling of l.c.l. shipments by the roads have been suggested by many within and without the industry. To all of them the roads are giving careful attention, because it is clear that something must be done to increase the attractiveness and decrease the cost of merchandise service.

It is held by some that there is need for rates intermediate between carload and less-carload levels applicable to shipments weighing less than the present carload minima, but of sufficient size to warrant elimination of handling as l.c.l., with a corresponding rate-saving to the shipper. This rate would meet most directly the volume charges of truck operators. One observer suggests an intermediate rate for straight or mixed loads of 10,000 lb. or more, to be applied from siding or team track to siding or team track, without transfer of lading en route, although with provision for stop-offs. A committee of railroad merchandise traffic men recently addressed itself to a study of intermediate rates for traffic weighing 5,000 lb., 10,000, and 15,000 lb., respectively.

To eliminate transfers resulting from a multiplicity of optional routes, and consequent inability to build up minimum loads for through cars on any one of them, it has been proposed that all l.c.l. routings be unified beyond the origin road, with a view to concentrating traffic on the best service routes to each destination, thereby justifying more through cars. The chief objection of railroads to this scheme is that those lines shut out of the route lose revenue and, some charge, also the carload business which sometimes "follows" l.c.l. serivce. On the other hand, there is good reason to believe that many shippers place little value on the right to route l.c.l.; would accept best-service routes willingly; and could be dissuaded from relating carload offerings to l.c.l. routings.

A more drastic scheme along these lines contemplates a complete pooling of l.c.l. service, in the manner of express, with the joint operating agency routing the business by whichever combination works best. Such a plan was opposed vigorously by the railroads and by a majority of the National Industrial Traffic League at the Senate forwarder hearings in 1940, but there is still support for it, especially in view of the changed status of l.c.l. costs.

Opposing such pooling and allocation of route proposals are those shippers and carriers who believe that competition should be preserved and that good l.c.l. service, even on a portion of an interline haul, wins customers. The issue would seem to turn upon a finding whether there is sufficient effective competition among the roads in furnishing merchandise service to warrant preserving the disadvantages of optional routing.

Shippers' Alternatives

In this connection, it is obvious that if a shipper desires competitive service between roads, he should consistently give his business to the better service route. He not only gets quicker and more reliable delivery thereby, but encourages further efforts toward improvement by a process of "reward for effort." Beyond that, he actually helps cut overall railroad costs by concentrating loads and permitting elimination of transfers. Many shippers, though critical of merchandise service generally, are content to dump all offerings, regardless of destination, on the freight platform of the nearest railroad freight station or in a trap car, apparently to save drayage. Surely good service is not encouraged by such indiscriminate methods of consignment.

Large shippers of l.c.l. are finding service benefits in making up an increasing number of ferry cars through to transfers or stop-off points. In these days of heavy small-lot consignments and hand-to-mouth living, other shippers might find equal opportunities to so channel and speed up l.c.l. shipments.

TRUCK OPERATORS REGAIN THEIR STRIDE

The motor truck is once again showing its teeth to the railroads and threatening to resume its prewar diversion of the cream of their traffic. Handicapped during the war by a shortage of rubber, gasoline, parts and manpower to an extent probably greater than were the shortages experienced by the railroads, the trucking industry has come back to fighting trim faster than have the railroads—due more to outside circumstances than to managerial zeal.

For one thing, the manufacturers of motor vehicles have been able to fulfill the equipment needs of the truckers to a far greater extent than have the railway supply companies been able to meet their customers' requirements. There were almost 20 per cent more motor trucks on the highways at the end of 1947 than at its beginning, and 34 per cent more than at the end of World War II. Manufacturers produced an all-time record number of trucks for civilian use during 1947—1,200,000 such vehicles being turned out in the year—more than a quarter of a million more than were made in 1946. In contrast, the railway freight car supply actually diminished during the year—retirements exceeding replacements in every month of the year until November. The program of carbuilding agreed upon by the railroads, the builders and governmental authorities as the absolute minimum was not lived up to, due principally to a shortage of steel.

Hence the truckers continue the fray with plenty of

RAILROADS REMAIN THE BASIC FREIGHT TRANSPORTATION

FREIGHT IN THE AIR

To the shipper, carriage of freight and express by air means the discovery of new and exciting ways to do business. To the railroad man this new development in transportation is both a competitor and an ally; the legree to which it is either remains to be seen.

The carriage of goods by air is not so much an alternative way of moving property now transported on the surface as it is an opening of the door to hitherto impossible marketing and development opportunities. To illustrate: Horsemeat is not relished by Americans, but is by some Europeans.

A section of the United States developed a superabundance of horsemeat which was unmarketable in ordinary channels. An adventuresome entrepreneur resolved the situation by shipping samples of well-dressed horsemeat by air to a European country, where an agent succeeded in developing an avid market almost immediately, due principally to a temporary shortage of food upon which super-rapid transportation capitalized. Once the market was developed, all subsequent shipments went by surface transportation.

Take another instance: The wholesale fruit market is such that the producer who gets his particular branded product at the metropolitan auction room the earliest builds up a buying desire which insures the

equipment, and almost all of it modern and efficient, at the same time that the railroads are unable to fulfill shippers' needs for empty cars. As a result the truckers get not only smaller-quantity shipments for which they ordinarily contend, but even large carload shipments which go by truck only because there are not sufficient cars to carry them. In this connection, contract truckers are expanding their field of operations enormously, establishing channels of regular traffic which may not return to the rails even when the car supply is adequate.

Naturally the truckers have welcomed recent boosts in rail freight rates, since they furnish an umbrella under which they can raise their own long-inadequate charges. At the present time there are sections where less-truckload rates are below less-carload rates because the Interstate Commerce Commission has suspended temporarily proposed truck increases designed to match or exceed the jump in rail less-carload charges. As a result, competitive aspects for the future are not clear. Railroads cannot go ahead with long-range plans for improving the service or price of merchandise hauling until they know what the relation between rates will be.

While, in theory, long-distance trucking may be economically unsound, there exists as yet no excuse for railroaders to underestimate future competitive power or to console themselves by thinking that there is a "hard core" of long haul traffic which the trucks can never touch. Truck terminal costs are high, too, and, under present conditions, a truck operator is under pressure to seek longer hauls with which to absorb them. The American Trucking Associations has under active consideration universal interchange of truck trailers to eliminate intermediate terminal handling and to improve long haul transit time. While trailer interchange has been in effect to a limited extent for a decade or more, establishment of interchange as a standard practice will, if successfully effected, produce important results.

"Reciprocity" between states and relaxation of restrictions on truck sizes and weights continue with unabated vigor. As a result, trucks may grow bigger and heavier and payments to government bodies may be diminished. On the other hand, the cost of labor has skyrocketed and gasoline is becoming scarce and expensive. The result is seen in the high operating ratios which characterize most trucking operations.

Whether it is the effect of increases in costs or a sign of growing maturity is not evident, but it is significant that what is believed to be the first formal application ever made by a motor carrier for authority to abandon freight service was filed with the I. C. C. late in 1947 by a truck operator who wished to abandon unprofitable routes. It appears that trucking is growing older and wiser.

MEDIUM, BUT COMPETITORS TAKE MUCH HIGH RATE TRAFFIC

sale of his crop. For some years producers of melons on the Pacific Coast have been sending the first fruits of their yield by air to a selected urban market to "prime the buying." The rest of the crop goes by rail.

It is the belief of men in the air transport field that the possibilities of opening entirely new markets and discovering entirely new ways of doing business have hardly been scratched. It remains for the imaginative traffic manager to dream out and utilize the peculiar advantages which this speedy—though costly—means of transport offers.

Railroads, of course, face loss of some high grade freight to the air carriers, especially where speed outweighs all other considerations. There is good reason to believe, however, that the growth of air transport of freight may bring more traffic to the rails than it takes away. Illustrations given indicate that new markets opened by air may develop into profitable surface transportation business. One thing is certain: the long-trend effect of air transport will be to extend markets and, therefore, to counteract the trend of decentralization which was apparent before World War II. As a carrier which profits from the long haul, railroads cannot fail to benefit therefrom.

The railroads' stake in the air carriage of goods is primary. Cargo shipment by air in this country was pioneered by the Railway Express Agency more than 20 years ago. This wholly owned subsidiary of the railroads furnishes the ground pick-up and delivery, with the result that it has saved the air lines the expense of establishing pick-up truck fleets and handling facilities and has insured complete service between thousands of points, the majority of which are not reached direct by air service. About 30 per cent of air express revenue is derived from shipments which originate or terminate at points not served by air line. Should bad weather interrupt air service, the agency forwards the shipment by rail, thereby minimizing delays.

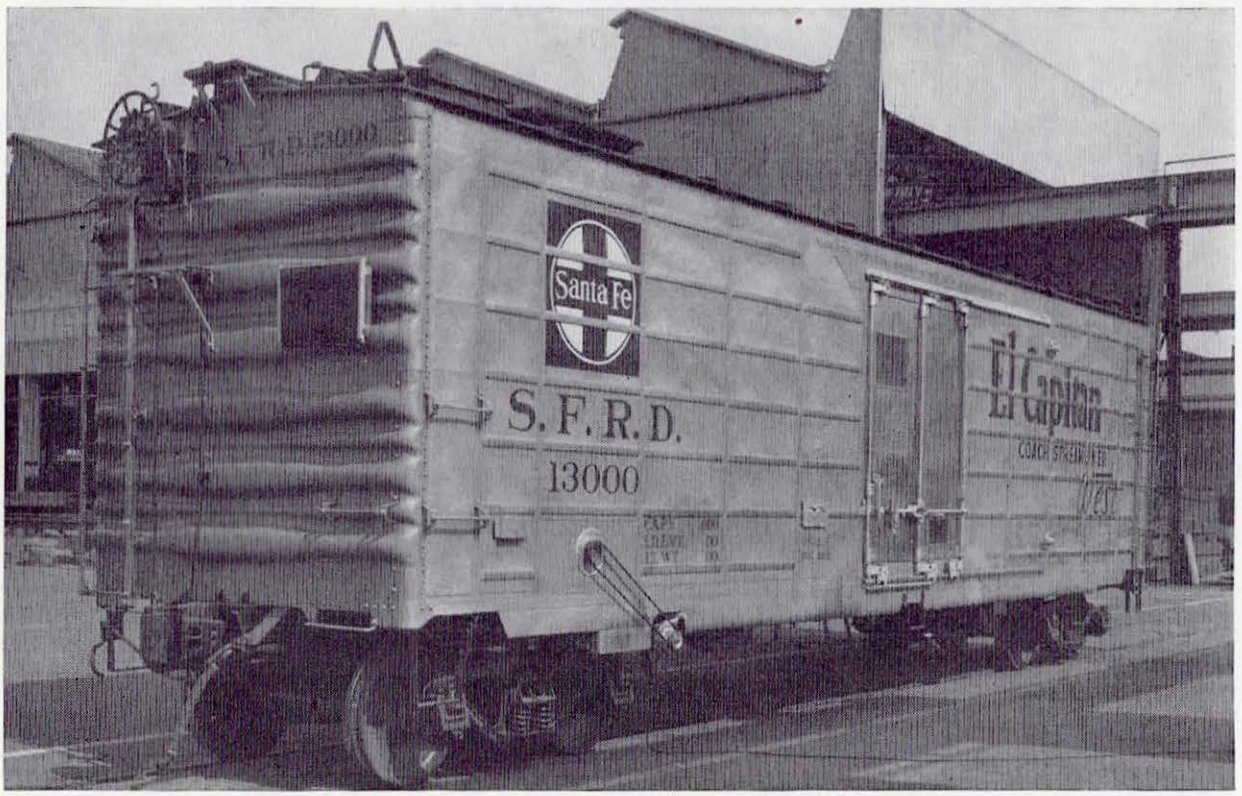
This wholesome, mutually advantageous coordination of facilities could easily be achieved for the growing volume of air freight as well, if it were not that the Civil Aeronautics Board has, *ex parte,* decided that it is more important to keep surface carriers out of the air transport business than it is to give the public service at lowest cost. As a result the ambitious and efficient air-freight arm of the Santa Fe, for example, had to be dissolved early this year, after a year and a half of outstanding operation, because there was no hope of getting common carrier rights from the C.A.B., while operation as a contract carrier was too stultifying.

Pennsylvania 60-ft. box cars for merchandise service with permanently installed load retainers

FREIGHT CARS FOR IMPROVED SERVICE

Use of devices for protecting the lading being extended—Improved mechanical equipment permits higher speeds and shorter schedules

A stainless-steel refrigerator car placed in test service on the A.T. & S.F. early in 1947. This car has stage icing, convertible bunkers, air circulating fans, and side ducts



One of the handicaps imposed on American railroads in the handling of many kinds of merchandise is the large size of American freight cars. These cars, which are of great economic advantage in the movement of bulk commodities, heavy intermediate products, and merchandise moved in large packages of relatively light weight, are a source of much damage to merchandise which moves in small and easily crushed packages. Even the depth of the load is kept too low for the economical use of its cubic capacity, the entire mass of the contents of the car acts together under the influence of the longitudinal shocks encountered in yards on the road, and crushing of cartons or crates and damage to contents is a common occurrence.

One of the advantages of containers is that packages in them are subjected under shock conditions to relatively small forces. So far, however, the use of containers continues on a very limited basis. More recently the problem of lading protection has been tackled along the lines of breaking up the space within the car into a number of units. Various schemes have been employed, some involving permanent collapsible bulkheads which never leave the car; others, gates or bulkheads which are removed when the car is unloaded and which are supposed to be returned to the loading point for further use. Most of these bulkheads have been developed by the railroads using them. Some are secured by blocking at the sides and floor of the car; others are secured by the use of metal straps for which the interiors of the cars are specially fitted.

Bulkheads Developed

The use of bulkheads began about 10 years ago and has been rapidly extending. While more generally employed in loading l.c.l. cars, they are also used in loading carload freight as well. Many roads which have been using them for some time are extending the practice, evidence that they have proved effective in reducing lading damage.

One of the problems associated with the use of gates or bulkheads is their return to the loading station following unloading. This tends to restrict their use to large stations and to home-line movements. The Southern, which has had long experience in the use of these devices, has established break-bulk service with connecting lines where such lines agree to similar return merchandise loads so that the bulkheads may be recovered. On the Atchison, Topeka & Santa Fe the bulkheads are stencilled for return to the originating station and each is given an individual number. These numbers are noted on the waybill, which assists in securing prompt return.

Permanent Loading Devices

The Missouri Pacific has developed permanently installed steel bulkheads which are hinged to the sides of the car, against which they can be folded back when not in use. These gates, which are installed at the door posts and halfway between the door posts and the ends, divide the car into five compartments of fixed size. As shown in one of the illustrations, these bulkheads clear the floor by about 2 in. Experience has indicated that a clearance of approximately 8 in. provides greater flexibility in loading by permitting steel pipe or other products to be loaded at the bottom of the car.

The Pennsylvania system of tubular steel gates, permanently hinged to the sides of the car, goes a step farther by adding a hinged tubular platform to the top of the lower gate the free end of which hooks over the adjoining gate when closed. This provides, in effect, a double-deck car.

Auto Loaders and Racks

While not in as extensive use as the bulkheads, a growing number of railroads are installing proprietary devices for a variety of loadings. The oldest of these is the auto loader with which enough cars are equipped practically to meet the demands of the automotive industry. A more recent development is the specialized equipment which has been installed permanently in box cars for the loading of automobile parts, farm implements, cartoned space heaters, crated water heaters, etc. Adaptations of loaders of this type, with which cars are permanently equipped, are coming into use for general l.c.l. and a variety of merchandise shipped in carload lots. They provide for separation of the load both vertically and horizontally into relatively small units which can be varied in size to suit the circumstances. These units are coming into service on a growing number of railroads, many of which are already making extensive use of home-developed bulkheads.

Special racks have been devised for loading automobile bodies and automobile frames. Bodies are bolted to each side of the rack, which is as long as the car. The loaded rack is then set vertically in a gondola by crane, and secured in place. This same type of rack is also used for shipping bodies in box cars.

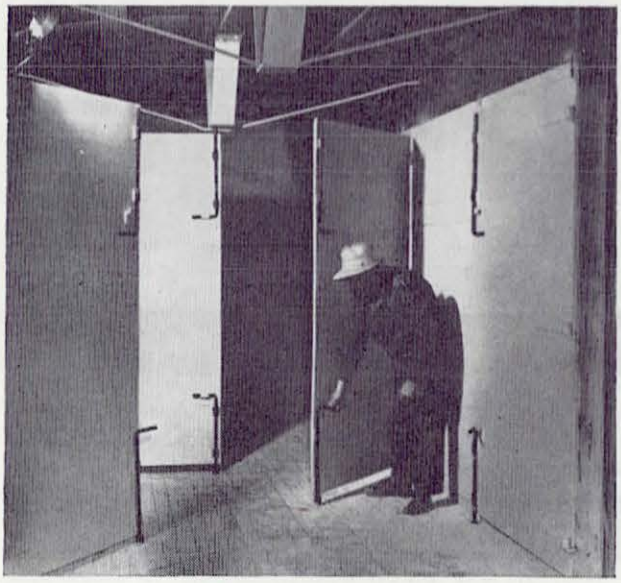
Containers of the truck-rail type, which have long been in service on a few railroads, are again attracting attention. In February the Illinois Central inaugurated experimental container service of this kind between Chicago and Memphis, Tenn. The containers are half-car size and are constructed of aluminum.

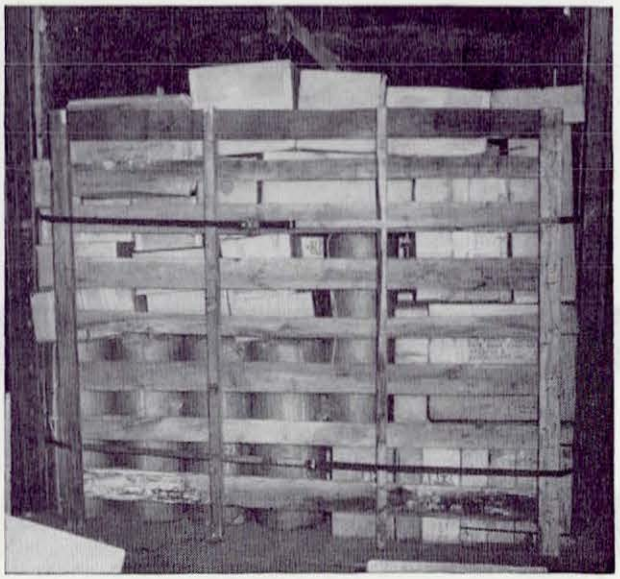
Refrigerator Cars

The most significant development in refrigerator cars which has occurred in recent years is the recommendations of the Refrigerator Car Committee of the United Fresh Fruit & Vegetable Association which were made in 1944. These recommendations, which dealt with inside dimensions, construction to reduce weight, insulation, refrigerant and other features, including collapsible bulkheads, outside-reading temperature indicating devices, and the use of blower type fans, have exercised extensive influence on the character of refrigerator cars which have since been built. Few cars are now being built which do not, in large part or as a whole, embody the recommendations of this association of refrigerator car users.

In the matter of weight, aluminum has been used as the material of construction for the superstructures of several cars built within the last two years. Others have been built of plywood on steel frames, and of stainless steel. Forced air circulation is serving to reduce damage and increase loading. Metal racks have been developed which weigh less than a ton per car in galvanized alloy steel and less than 1,000 lb. in aluminum. Aside from the lighter weight, they offer less restriction to air movement under and through the racks.

Tests of an iceless refrigerator car were made by the United States Department of Agriculture in a car-testing laboratory at Potomac Yards, Alexandria, Va., during the early part of 1947. The refrigerant is anhydrous ammonia stored under pressure in tanks attached to the underframe, and recovered in water tanks, also attached to the underframe. A 10-day test indicated that "an iceless refrigerator car can maintain temperatures of approximately 0 deg. F. under conditions of summer heat," according to a statement issued by the department.





Left—These steel, hinged bulkheads are a development of the Missouri Pacific. Right—A removable bulkhead secured with straps

Mechanical Equipment

Considerable activity is taking place in the development of freight-car trucks. The effect of improved trucks on the quality of freight service is twofold. One objective is a safe ride at speeds considerably above those within which conventional freight-car trucks were expected to operate when they were designed. Another objective is to provide a smooth ride without notable critical speeds. The fruit of the first objective will be the reliable maintenance of improved schedules. That of the second objective is less damage to lading caused by vertical and lateral shocks.

The characteristics of modern high-speed trucks are built-in snubbing devices to prevent critical build-up of vertical oscillations and an increase in spring travel from 1⅝ in. to as much as 4 in. to insure an easier ride at high speeds. Lateral cushioning is also provided. Several such trucks have already been developed. Instead of a snubber, one truck employs springs of dissimilar capacity and frequency of oscillation which are placed in series, to damp out critical oscillations. The high-speed truck development is by no means finished. Other trucks are under way.

Roller bearings are breaking into the freight-car field. At least three railways have roller-bearing freight cars for use in freight-train service, and a fourth will be the Chesapeake & Ohio when it begins to receive its roller-bearing hopper cars this month, of which 1,000 are on order. Others are using a few box cars, the trucks of which are fitted with roller bearings, in head-end passenger service.

Roller bearings were applied to 300 stock cars by the Union Pacific last year. These cars are credited with helping to speed up the movement of live stock between Salt Lake, Utah, and Los Angeles, Cal., reducing the time en route from 58 and 60 hours to 32 hours. The roller bearings have removed journal-box restrictions on speeds, thereby contributing to the elimination of an intermediate water and feed step.

UBIQUITOUS RAILWAY EXPRESS RECOVERS ITS EFFICIENCY

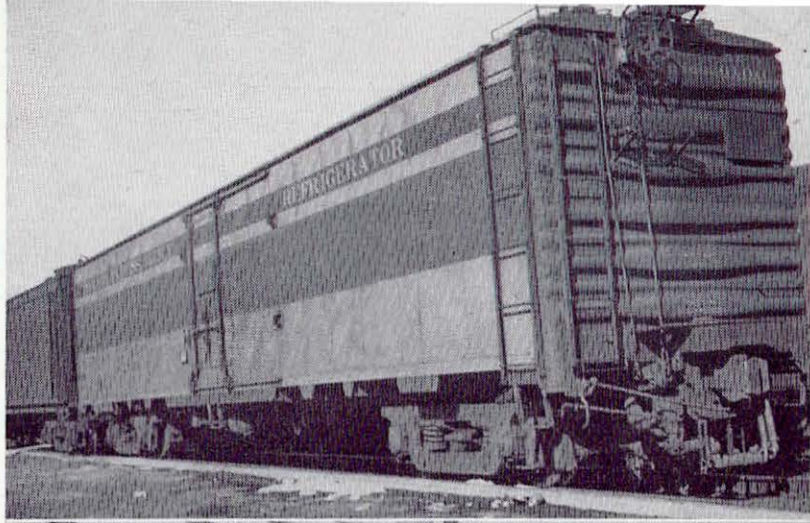
The service of the Railway Express Agency to shippers has improved substantially in recent months as manpower and new equipment have become available to handle a volume of business that during the postwar reconversion period overtaxed at times the organization's war-wracked facilities and personnel. New cars, new buildings, new trucks, new handling equipment, including roller conveyors, and an intensified employee-training program are contributing to this improvement.

The availability and performance of the Express Agency, and its predecessors, have been taken for granted so long that the unique nature of this branch of the railroad business, as it has developed in this country, is sometimes overlooked. Nowhere else in the world is there a single organization prepared to give what amounts to courier service to shipments of practically any commodity and size or value between 23,000 points served by some 285,000 miles of railroad, water, motor, air, stage and ferry lines, and with connections for service overseas. Though it is free from the controlling necessity that revenues must at least equal expenses, under which private enterprise must function, even the far-reaching parcel post limits the size of the packages it handles and requires the shipper to deliver them to a postal station.

To meet increasing costs, particularly for labor, and to pay for the constant additions and betterments on which superior transportation service must be based, R.E.A. has been authorized by the Interstate Commerce Commission to increase its rates to a level averaging about 46 per cent above the 1940 basis. No net income or profit accrues to the agency, however, and no dividends are paid on its capital stock, ownership of which rests in 70 railroads.

R.E.A. operations on the railroads face the competition not only of the parcel post, but of the railroads' own slower but cheaper l.c.l. freight service, the commercial truckers, the freight forwarders, and air freight and express. Nevertheless it handled 193,096,471 shipments in 1947.

The Express Agency has been the only form of surface transportation that has been allowed to participate in regular commercial air operations in this country, this being the result of its arrangement with the air lines to employ its pick-up and delivery facilities—and its railroad service, too, where air operation fails or does not reach—in a smoothly coordinated high-speed transportation machine, largely a product of R.E.A. initiative.



Where Railway Express revenues go (reading down): To provide "reefers" of the latest type for the movement of perishables, fitted with roller-bearing trucks for high-speed passenger train operation—To handle small shipments safely and expeditiously in efficient terminal buildings and large fleets of trucks and trailers—To speed parcels on their way with modern mechanical devices and trained personnel—To connect all parts of the earth to the shipper's door, through pick-up and delivery service functioning in coordination with air lines and railroads

MOTIVE POWER USE IS UNDERGOING REFINEMENT

High performance standards established by the use of Diesel power have taught the railroads lessons that are paying dividends in improved utilization of their large inventory of steam power

No major new developments having reached the stage of practical application in the field of freight motive power during the past 12 months, the railroads of this country were able to concentrate on the job of refining the technique of the use of Diesel-electric and steam power. Considerable progress has been made in this direction. The high performance standards that have been established in the use of Diesel power have been maintained and the lessons learned in its utilization have continued to be of such value that improvements in the use of steam locomotives are going ahead at a rapid rate.

The past year has brought to light facts previously known but without benefit of evidence—namely, that, as any motive power unit, Diesel or other, grows older its maintenance cost increases, and that because of this the overall operating cost, mile for mile, of Diesel power is creeping up and on many roads is on a par with steam. This should not necessarily be taken at face value when it is considered that for each dollar of operating cost the Diesel has a much higher availability for service than steam and will outperform it on the road. When calculated on a gross ton-mile basis, the overall operating cost of a Diesel-electric freight locomotive is on the order of 10.6 cents per 1,000 gross ton-miles as compared with 10.9 cents for *modern* steam power.

Not the least of the benefits of the adoption of Diesel power has been the impetus given programs for new railroad shop facilities. While most of these have involved large expenditures for new or modernized shops for the running and heavy maintenance of the mechanical and electrical equipment of Diesel-electric locomotives, the experience gained in reduced costs from these new Diesel facilities has shown the potential value of making extensive improvements in shops and enginehouses for maintaining steam power.

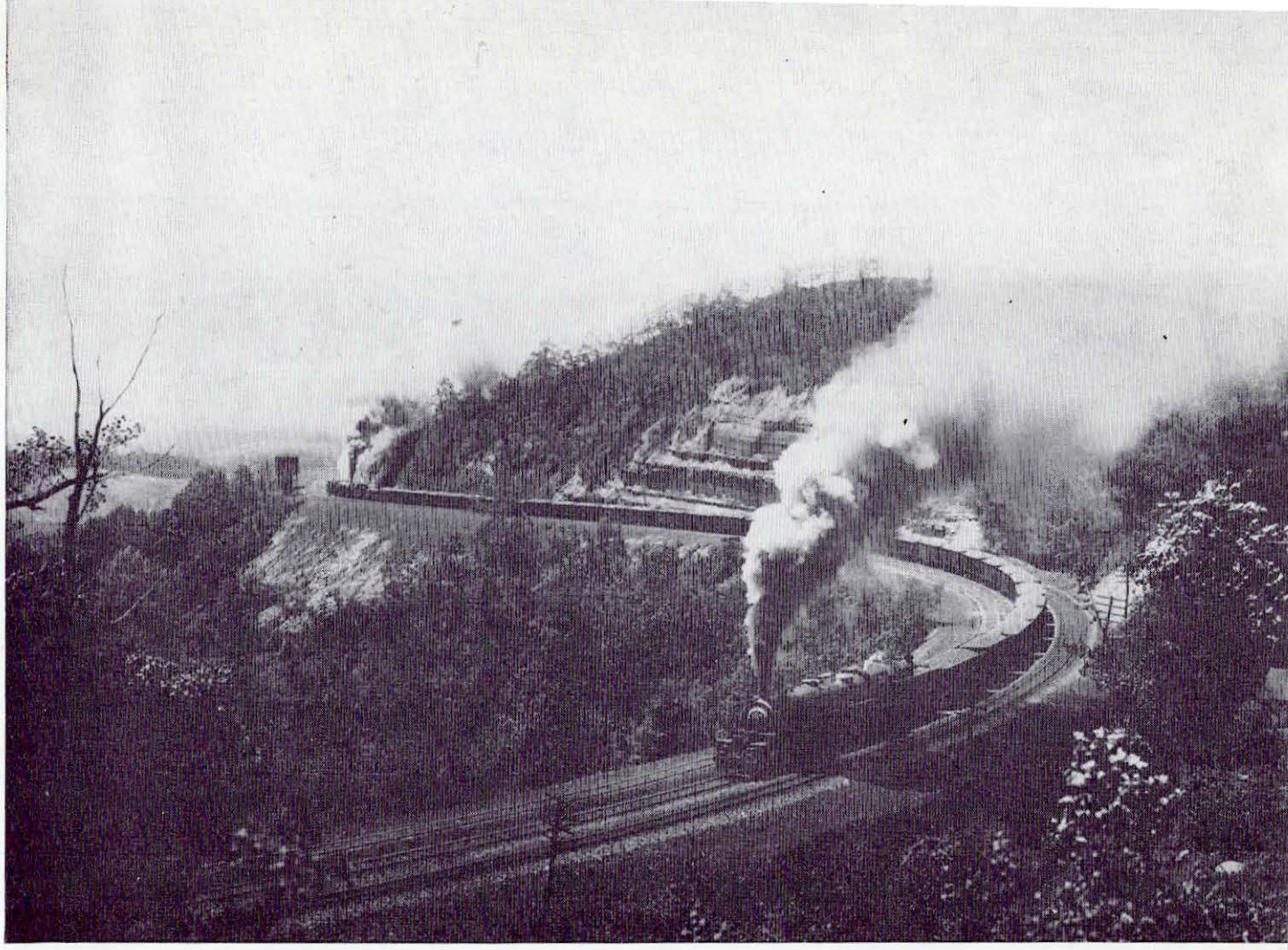
The Statistics of Performance

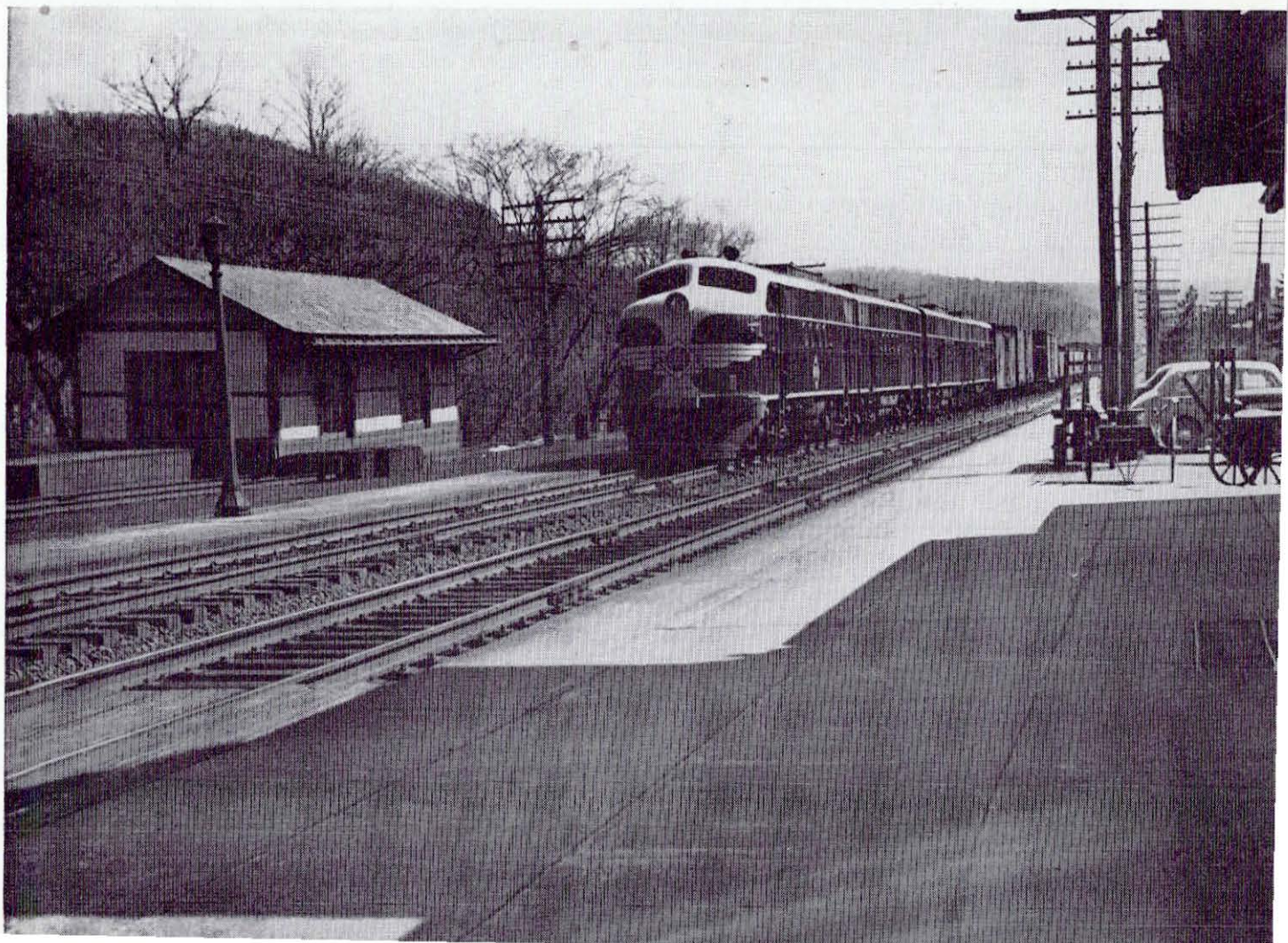
This has been particularly true in relation to engine-terminal improvements for the handling of steam locomotives. High availability for road service having now been recognized as an outstanding locomotive requirement, many roads have concentrated on making a critical analysis of terminal operations with the objective of cutting down the non-revenue time a locomotive spends at an enginehouse. Remarkable strides have been made in reducing terminal time, particularly with respect to inspection and lubrication, and the

TABLE 1 — SELECTED STATISTICS OF MOTIVE POWER AND FREIGHT TRAIN PERFORMANCE

	Total Freight locos.	Un-service-able	Stored Service-able	Active locos.	Per cent active to total	Loco. miles (000)	Gross ton-miles (000,000)	Freight train-miles (000)	Freight car-miles (000,000)
	1	2	3	4	5	6	7	8	9
1928									
October	28,912	4,417	2,680	21,755	75.3	64,756	110,444	56,748	2,785
1942									
October	22,027	2,344	340	19,343	87.8	70,461	141,880	60,717	3,155
1943									
October	22,037	2,703	335	18,999	86.2	70,084	145,076	60,355	3,185
1944									
October	22,398	2,796	465	19,137	85.6	67,948	143,539	58,884	3,185
1945									
October	22,311	3,170	1,221	17,920	80.3	57,412	114,445	50,319	2,538
1946									
October	21,944	3,708	672	17,564	80.0	61,507	127,897	53,726	2,764
1947									
January	21,856	3,706	804	17,346	79.4	59,775	120,672	52,315	2,620
February	21,835	3,667	775	17,393	79.7	54,143	109,012	47,359	2,355
March	21,712	3,583	826	17,303	79.7	60,673	126,573	53,116	2,744
April	21,558	3,529	804	17,255	79.9	56,667	117,253	49,813	2,604
May	21,570	3,490	851	17,229	79.9	59,695	128,066	52,332	2,804
June	21,451	3,538	868	17,045	79.5	56,790	120,648	49,595	2,620
July	21,413	3,404	885	17,124	80.0	56,560	117,653	49,646	2,577
August	21,384	3,400	808	17,176	80.3	59,444	128,784	52,054	2,766
September	21,329	3,361	716	17,252	80.9	58,223	125,115	50,943	2,705
October	21,384	3,267	579	17,538	82.0	62,664	135,743	54,849	2,934
November	21,269	3,396	546	17,327	81.5	59,273	126,444	51,962	2,753
December	21,163	3,342	567	17,254	81.5	59,373	122,460	52,163	2,895
1948									
January	21,111	3,268	655	17,188	81.4	57,726	115,899	50,630	2,510
February	21,132	3,440	724	16,968	80.3	54,802	113,025	48,101	2,449

Note: Data in columns 1 to 4 from I. C. C. Statement M-240 "Motive Power and Car Equipment;" columns 6 to 9 from I. C. C. Statement No. M-211 "Freight Train Performance;" column 5 calculated.





result has been that modern facilities and methods have increased steam locomotive availability and helped to control costs related to servicing and running repairs.

As the use of Diesel-electric locomotives in road freight service increases, the influence on the overall statistics of freight-train performance broadens. In an article in the *Railway Age* of May 31, 1947, page 1120, a table was published showing freight performance statistics separated between steam and Diesel operation. Until recently it was not possible to make a detailed separation of these performance figures, and so the true picture of the effect of the use of Diesel power in road freight service had not been revealed. A year ago, with 645 Diesel-electric locomotives available for road freight service, the Diesel, on the Class I roads, was handling an average of 2,989 gross tons per train, 64,779 gross tons per train-hour and maintaining an average speed of 21.67 m.p.h.

In the past year over 200 more Diesel-electric freight locomotives have been added to the inventory and the figures reveal that performance, while slightly under last year's, is still at the high rate already established by the Diesel road locomotive. An interesting development, however, has been that, with the retirement from service of almost 1,500 steam road locomotives, not to mention about 400 steam switchers, the overall performance of the remaining steam power in service shows a definite improvement, except in the matter of train speed.

Table I shows the comparative statistics of freight motive power and freight-train performance. With traffic, as represented by gross ton-miles, but slightly under 1946, the motive power situation shows that the lessons of the last few years have been so well learned that the utilization of all motive power is carrying along at an unusually high rate, as indicated in column 5 of the table. With 21,132 freight locomotives, 866 of which are Diesel-electric, the number of stored locomotives has not materially increased above that which might be considered normal for the change in traffic conditions. Throughout the two years 1946 and 1947 the locomotives in or awaiting shop have been fairly constant and the indications are that, particularly during the past 12 months, shop operations are proceeding at a rate that is gradually reducing not only the number of locomotives awaiting shop but the time required to put them through the shop.

Table II shows the inventory of freight motive power as of March, 1947 and 1948. The table is self-explanatory and is of interest because it shows the constant reduction in the inventory of steam power, the increase in the use of Diesel-electric power and status of the orders for locomotives at the same period in the two years.

Table III, to which previous reference has been made, shows again the separated statistics of steam and Diesel operation. This time the comparative figures in Table III are for two years and it may be emphasized that any interpretation of the statistics of operation today must be made on the basis of separating the figures with respect to the use of two types of motive power. The performance of the Diesels, small in number though they may be as compared with the remaining number of steam locomotives, is so much better than the best figures with respect to steam power that it is not fair to the newer type of power to bury the statistics of Diesel operation in overall figures. A comparison of the last two columns of Table III will show what happens when this is done.

TABLE II — INVENTORY OF MOTIVE POWER USED IN FREIGHT SERVICE

	As of March, 1948			As of March, 1947		
	No. of locomotives	Aggregate tractive force lb. (000)	No. on order	No. of locomotives	Aggregate tractive force lb. (000)	No. on order
Steam freight	21,834	1,332,185	66	23,124	1,396,560	40
Steam freight or passenger	1,363	77,862	0	1,426	80,398	0
Steam switching	5,882	260,296	33	6,277	274,069	0
Diesel freight	806	24,076	424	524	76,249	261
Diesel passenger or freight	60	5,771	30	121	11,278	12
Diesel switching	3,025	169,363	868	2,689	150,356	162
Electric freight	323	25,383	1	326	25,323	4
Electric freight or passenger	5	458	0	3	90	2
Electric switching	111	4,356	0	111	4,356	0

Note: Data from A. A. R. Car Service Division Report No. 56-A-1.

TABLE III — SELECTED FREIGHT PERFORMANCE STATISTICS — YEAR 1947 AND 1946

	Steam		Diesel		Combined	
	1947	1946	1947	1946	1947	1946
Train-miles	543,360,670	535,994,009	62,637,466	44,446,733	605,998,136	580,440,742
Locomotive-miles	623,871,281	613,553,940	67,048,980	47,437,286	690,920,261	660,991,226
Gross ton-miles (000)	1,265,252,501	1,203,091,053	182,970,667	132,863,302	1,448,223,168	1,335,954,355
Train-hours	34,955,152	34,201,180	2,894,781	2,050,933	37,849,933	36,252,113
Gross tons per train	2,329	2,245	2,921	2,989	2,389	2,302
Gross tons per locomotive	2,028	1,961	2,729	2,800	2,096	2,021
Gross ton-miles per train hour	36,197	35,181	63,202	64,779	38,262	36,852
Train speed, m.p.h.	15.54	15.67	21.63	21.67	16.01	16.01
Locomotive miles per train-mile	1.15	1.14	1.07	1.06	1.14	1.13

Note: Data from I. C. C. Report M-211.

TABLE IV — ROAD LOCOMOTIVE MILEAGE AND YARD SWITCHING HOURS — BY LOCOMOTIVE TYPE

	Road freight miles (000)				Freight train switching miles (000)				Yard switching hours—Freight (000)			
	Total	Steam	Diesel and other	Electric	Total	Steam	Diesel and other	Electric	Total	Steam	Diesel and other	Electric
1939	507,850	495,465	216	12,170	43,561	42,812	37	712	36,658	34,079	2,304	275
Per cent of total	....	97.6	0.43	2.4	....	98.2	0.1	1.6	....	92.9	6.2	0.9
1940	543,728	530,305	527	12,985	45,991	45,077	89	824	40,312	36,369	3,639	304
Per cent of total	....	97.4	0.97	2.4	....	98.1	0.2	1.8	....	90.2	9.0	0.8
1941	645,980	629,622	1,712	14,646	52,673	51,551	245	877	48,617	42,660	5,611	346
Per cent of total	....	97.5	2.65	2.2	....	97.9	0.5	1.7	....	87.7	11.5	0.8
1942	770,096	749,736	5,778	14,582	57,000	55,757	501	742	54,968	46,707	7,914	347
Per cent of total	....	97.5	0.8	1.9	....	97.9	0.9	1.3	....	84.9	14.3	0.8
1943	813,493	789,845	9,525	14,123	55,439	54,050	653	735	57,467	47,689	9,400	378
Per cent of total	....	97.2	1.2	1.7	....	97.6	1.2	1.3	....	82.9	16.3	0.8
1944	806,325	770,267	21,575	14,468	54,149	52,488	857	751	57,796	45,391	12,012	293
Per cent of total	....	95.6	2.7	1.8	....	97.1	1.6	1.4	....	78.5	20.7	0.8
1945	750,024	698,305	38,139	13,570	52,199	50,165	1,339	685	59,291	41,943	13,978	370
Per cent of total	....	93.1	5.1	1.8	....	96.1	2.6	1.3	....	74.5	24.8	0.7
1946	674,468	613,554	47,446	13,468	50,930	48,538	1,758	634	53,280	37,716	15,206	359
Per cent of total	....	91.0	7.0	2.0	....	95.3	3.5	1.2	....	70.8	28.5	0.7
1947	703,470	623,871	67,052	12,547	53,169	49,817	2,709	642	56,803	38,918	17,552	344
Per cent of total	...	88.7	9.5	1.8	....	93.7	5.1	1.2	....	68.5	30.9	0.6

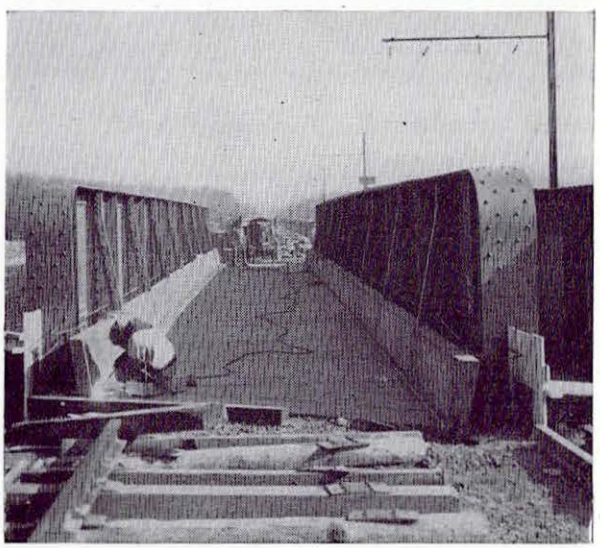
Note: Data on road and freight-train-switching locomotive mileage taken from I. C. C. Statement No. M-211 "Freight Train Performance;" data on yard switching hours taken from I. C. C. Statement No. M-215, "Yard Service Performance."

Table IV is included as a continuance of the record of the use of locomotives of various types in various classes of service. As of the end of 1947, 88.7 per cent of the road freight locomotive mileage was made by steam locomotives, 9.5 per cent by Diesel and 1.8 per cent by electric. These figures show the continuing decrease in the use of steam power and the increase in the use of Diesel power. The same is true of the use of switching locomotives as indicated by the part of the table showing freight-train switching-miles and yard switching-hours in freight service. The more than 3,000 Diesel-electric switchers are now handling almost 31 per cent of all freight switching. These figures include also Diesel switchers used in passenger switching. The 5,882 steam switchers used in freight switching operations perform more than 68 per cent of the switching work.

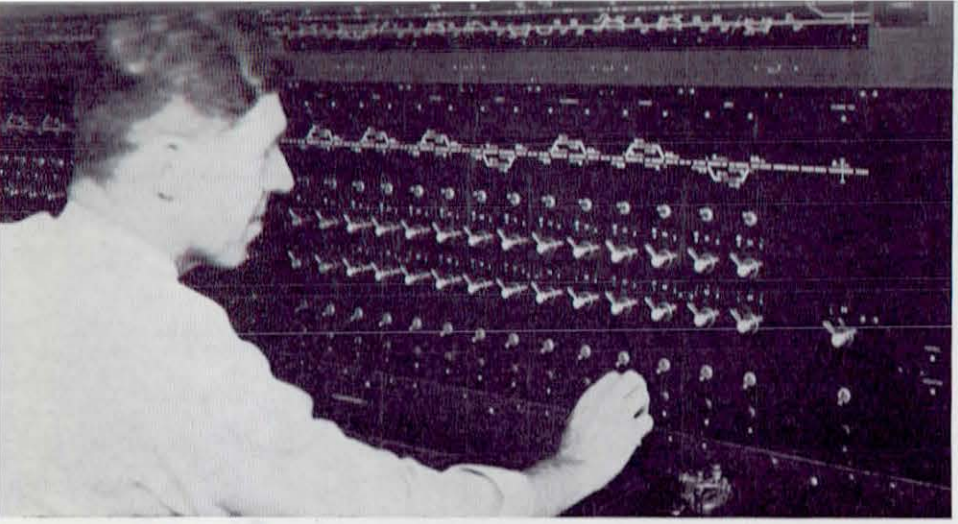
Unit Miles or Locomotive Miles?

In the matter of statistics and their value for making comparisons in the future, the Diesel-electric locomotive is imposing a complication that may easily operate to confuse the relationships between locomotive miles and train miles. For many years freight locomotive miles have consistently remained at from 10 to 15 per cent greater than train miles. The extra miles are of course the helper and pusher miles. Diesel-electric locomotives, designed as they are to operate in various combinations of A and B units, do not always run in the same combinations. With light trains one or two units may be adequate to do the job, whereas with heavier trains three and four units are used. The operating statistics of individual roads might lead to the conclusion that a four-unit Diesel may, in some cases, be considered as more than one locomotive and that, therefore, there might be some question as to whether one or more locomotive miles should be recorded for each train mile of run.

For reasons of consistency and accuracy in keeping maintenance and operating cost records, many roads have adopted a system of keeping Diesel locomotive records on a unit-mile basis. Inasmuch as B units of road locomotives are always operated in combination with A units and in different combinations on different runs, the question has been raised as to the proper method of reporting locomotive miles. It is believed that most roads report the data on the OS-F forms to the Interstate Commerce Commission on the basis of locomotive miles regardless of the number of units making up a Diesel locomotive. The reason for including this reference in an article of this nature is to raise a question in the mind of a user of the freight operating statistics, when dealing with figures relating to an individual road, as to the reason why some roads show a ratio of locomotive-miles to train miles as high as 1.95. Reference to Table III shows that the 1947 average for a Diesel-powered train is 1.07, reflecting the fact that relatively few Diesel-powered trains require helper locomotives.



A 10-year trouble-free service record established by a double-track "ballast-type" bridge on the Pennsylvania's main line out of Washington, D. C., has resulted in adoption of the same design for this new single-track span alongside it



By means of the illuminated track diagram on a centralized traffic control machine, the dispatcher visualizes the progress of trains and can arrange for close meets

Centralized traffic control reduces delays at sidings on the road, and car retarders with power switches expedite operations in classification yards

SIGNALS KEEP SHIPPERS' FREIGHT MOVING

Modern signal systems are being used effectively in many ways to reduce delays, and thereby shorten the overall time of cars in transit between shippers and consignees. For example, one of these systems—centralized traffic control—minimizes the time trains spend in waiting on sidings on the road, and another —car retarders—diminishes the time lost when cars are passing through classification yards.

There are now 360 installations of centralized traffic control in the United States and Canada, involving more than 10,000 mi. of track, and 44 yards equipped with retarders. These are so well distributed geographically that a car routed between any two major cities is almost certain to save considerable time as compared to former practices. A low average saving is a minute for each mile of C. T. C. and an hour for each retarder-equipped yard through which a car passes. For example, a car on a route including 840 mi. of C. T. C. and passing through one yard would save 15 hr.

More installations of these forms of signaling are under way and planned.

What Is Centralized Traffic Control?

Centralized traffic control is a system including power switch machines at sidings and signals at these switches for authorizing trains to (1) continue on the main track to the next town; (2) enter the siding and wait; or (3) leave the siding and proceed. These signals and the power switches through an extended territory are under the control of a man sitting at a machine in a central office.

This centralized traffic control system has been installed most extensively on single-track lines, but it is used also on multiple-track lines to authorize train movements in both directions on one or more tracks. With this system on double track, for example, a fast passenger train can be diverted to the second track to run around a freight train, and thus keep all trains moving rather than delaying the freight trains. This method of operation is used extensively on the Pennsylvania, the Boston & Maine and the Texas & Pacific, and an installation of 75 mi. is now under way on the Chicago & North Western.

With centralized traffic control the use of power switches saves time by eliminating train stops and delays formerly required to permit trainmen to operate hand-throw stands. For a long freight train making a move from a siding, then over the main track and into another siding, this use of power switches saves 10 to 15 min. or more, depending on the grades and curvature. This time saving is often the margin which permits a train to be advanced one or more sidings, and to arrive at its terminal 30 min. to 1 hr. sooner.

Automatically controlled illuminated track diagrams on these C. T. C. control machines include lamps by means of which the man in charge can visualize the locations and progress being made by all the trains. Based on this panorama, he can control the signals to keep trains moving to the sidings where they can meet or pass with minimum delay. On projects where the sidings are longer than the trains, about half the meets can be made without either train stopping. Another advantage is that C. T. C. increases the track capacity so that trains can be directed to depart from yards as soon as they are ready to go, rather than wait until train orders can be issued.

Especially during recent years, numerous installations of centralized traffic control have been made on many railroads. Among outstanding extensive projects included in long through routes is the 1,034 mi. between Chicago and Denver, Colo., in which the Burlington has 483 mi. of single track with C. T. C. between Lincoln, Neb., and Denver, and two or more tracks between Chicago and Lincoln. West from Denver to Salt Lake City, Utah, 570 mi., the Denver & Rio Grande Western has C. T. C., except for a few short sections, most of which are double track. West from Omaha, Neb., the Union Pacific has double track to Ogden, Utah, and Salt Lake City. From one or the other of these cities, single-track lines, for the most part, of that road extend to Los Angeles, Cal., and Portland, Ore., while the Southern Pacific and Western Pacific have lines to San Francisco. Centralized traffic control is now in service, under con-

struction or planned on these sections of the Union Pacific, as well as on major portions of the Southern Pacific and Western Pacific routes.

The Santa Fe has double track between Chicago and Newton, Kan., as well as between Belen, N. M., and Los Angeles. On the line between Newton and Belen, via Amarillo, Tex., the Santa Fe has installed or has planned to install C. T. C. on all the single track, so that double track or single track with C. T. C. will be in service all the way between Chicago and Los Angeles on the route via Amarillo, which handles the through freight traffic.

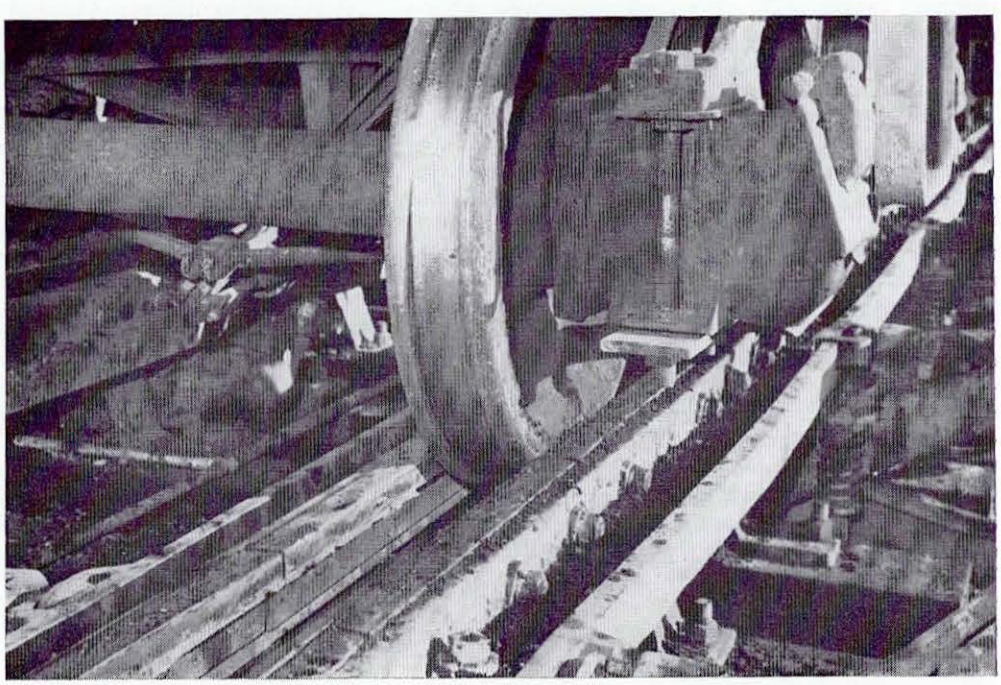
The Boston & Maine has double track or single track with C. T. C. between Boston, Mass., and Portland, Me. There are multiple tracks between New York and Richmond, Va. From Richmond south, the Seaboard Air Line has centralized traffic control on nearly all of its single track to Jacksonville, Fla., and construction is under way to extend this signaling to Tampa and Miami.

This arrangement, including double track, or single track with centralized traffic control, is used, except for short sections, on many other through routes, such as between St. Louis, Mo., and Texarkana, Tex., on the Missouri Pacific; Texarkana to Dallas on the Texas & Pacific; Louisville, Ky., to New Orleans, La., on the Louisville & Nashville; St. Louis to Tulsa, Okla., on the Frisco; Nashville, Tenn., to Chattanooga on the N. C. & St. L.; Chicago to El Reno, Okla., on the Rock Island; Chicago to Mobridge, S. D., on the Milwaukee; and Halifax, N. S., to Moncton, N. B., on the Canadian National.

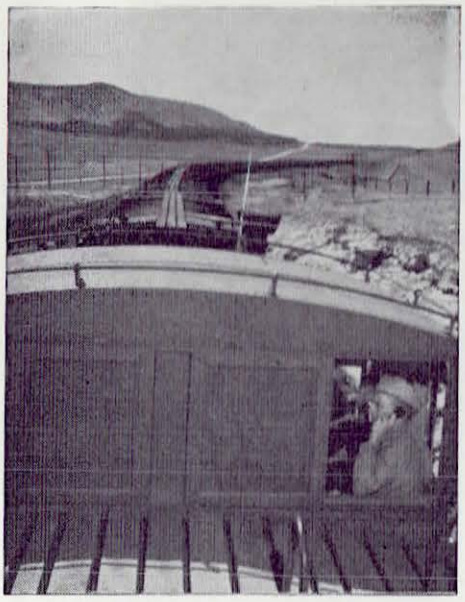
Of current interest is the fact that completion of these modern signaling facilities on extended routes has been brought about by large-scale programs completed during the last year—for example, on 248 mi. beween Hamlet, N. C., and Savannah, Ga., on the Seaboard; 231 mi. between Herington, Kan., and El Reno on the Rock Island; 105 mi. between Louisville and Evansville, Ind., on the Louisville & Nashville; 122 mi. between points near Terre Haute, Ind., and Evansville on the Chicago & Eastern Illinois; and 96 mi. between Cincinnati, Ohio, and Portsmouth on the Norfolk & Western. Further extensive projects are under way or authorized on various railroads, including the Wabash, the Western Pacific, the Union Pacific, the Louisville & Nashville, the Santa Fe and the Pittsburgh & West Virginia.

In yards also, modern signaling, in the form of power switches, signals and car retarders, saves time for cars of freight in transit. A car retarder consists of series of brakes, located along the rails, which act on both sides of the rims of the wheels to control the speed of cars as they pass down the incline to the classification tracks in a yard. These retarders, along with power switch machines, are controlled by a man in a tower, thereby expediting the classification of cars as compared with the previous practice of using switchmen to throw switch stands and car riders to apply hand brakes.

These car-retarder, power-switch installations permit yards to be operated at peak capacity continuously, or for intermittent periods day and night regardless of adverse weather. The principal benefit is that all trains can be classified promptly on arrival, and, therefore, the cars can be delivered to consignees or made up in trains for further road movement much sooner. These retarder systems are in service in more than 40 large yards. The car-retarder projects completed last year were at the Union Pacific yard at Pocatello, Idaho, and the Baltimore & Ohio yards at Cumberland, Md., and Willard, Ohio. Further installations under way or planned will be at the Union Pacific yard at North Platte, Neb., and at the Santa Fe yard near Kansas City, as well as at a second yard of the Baltimore & Ohio at Willard. The shippers, through these installations of signaling, are receiving better service, and they will receive further similar benefits as rapidly as the railroads can secure adequate funds for materials to extend these facilities.



A car retarder consists of sets of brakes along both sides of each rail which grip the sides of the rims of the wheels



Modern printing telegraph networks speed prompt and efficient service to freight shippers

End-to-end communication on freight trains provides a constant means of contact between the engineer and conductor

IMPROVED COMMUNICATIONS KEEP 'EM ROLLIN'

Modern wire, radio and other facilities expedite operations and cut costs in yards and harbors and on the road

Printing telegraph, yard and road train communications, loud-speakers in yards and freighthouses, and radio and radar-equipped tug boats—all are making important contributions to increased operating efficiency and reduced costs, thus enabling the railroads to afford quicker and better service to shippers. Use of printing telegraph systems, employing machines resembling typewriters in action and appearance, permits more rapid transmission and reception of reports and messages regarding freight movements between distant cities which would otherwise have to be handled by telephone, telegraph or mail. Two-way space radio transmitters and receivers in yard offices and on switching locomotives furnish a constant means of communication between yardmasters and the crews on locomotives working in yards and industrial areas. Instructions may be issued at any time without the crew having to call in by telephone, thus speeding considerably the pick-up, delivery and general switching of freight cars.

Installation on road locomotives and cabooses and in wayside offices of radio, as well as inductive communication transmitters and receivers which depend on wayside line wires to carry the high-frequency voice signals, permits communication at any time between the engineers and conductors of freight trains, as well as between the trains and wayside offices. By use of walkie-talkie units, any member of a train crew walking alongside the train may talk to the engineer in his cab or to another member of the crew in the caboose. These facilities are valuable aids to crews of freight trains in numerous instances, such as in setting out and picking up cars, as well as in emergencies arising from hot boxes or other trouble.

Two-way space radio transmitters and receivers on railroad tug boats and in harbor masters' offices expedite the handling of car floats in harbors. The harbor master is able to issue instructions to the tug captain at any time, without having to wait for the vessel to tie up somewhere to telephone in for the instructions. Radar equipment on tug boats enables them to operate in stormy and foggy weather with safety from collisions with other vessels, when they would otherwise be delayed or tied up.

Two-way loud-speakers located at strategic points throughout yards and connected to the yardmaster's office permit instructions to be given promptly to switch crews on the ground, thus speeding the movement of cars and trains through yards. Loud-speakers installed throughout freighthouses are helpful in the handling of less-than-carload freight shipments, because freight supervisors are able to keep in constant touch with the freight handlers and issue instructions or make inquiries regarding special shipments at any time. All of these various facilities are already contributing materially to improved service to shippers, and many roads are expanding their communications systems to include more and more of them. Typical examples of some recent applications or proposed installations of these facilities follow.

The Baltimore & Ohio, in broadening its services to shippers, including the establishment of its "Sentinel Service," has made extensive installations of printing telegraph equipment. Interchange, delay, coal dock, lake coal and ore situation, accident and conductor's wheel reports are among the many reports now being handled by the new communication service. This has expedited yard operations, thus speeding up car handling and

train movements. It has enabled provision of more complete and up-to-the-minute information for traffic representatives—the feature on which the road's Sentinel Service is essentially based. Car records and accounting have been facilitated and operating costs have been reduced.

The Canadian Pacific has increased its use of printing telegraph, thus securing faster handling of general business in connection with freight movements. Additional network facilities for car tracing and wheel reports, involving the use of punch-card units specially designed for this class of service, are also under consideration on this road. The Grand Trunk Western is considering extensive use of printing telegraph as a quicker means of communication.

The Pennsylvania has made changes in and extended its printing telegraph networks to further its system of providing information to terminal yards, produce terminals, service bureaus and operating officers regarding the make-up of trains as they depart from each yard. With the information regarding the contents of each train at hand in advance of its arrival, each succeeding yard and operating group is prepared to handle the cars and shipments more expeditiously and with greater efficiency.

The Southern Pacific has facilitated the delivery of freight shipments by modification of its printing telegraph machines used in the handling of waybills between various points to increase their transmission speed from 60 to 75 words per minute, and to permit seven copies of each message to be made ready for use simultaneously at the receiving end.

Communications in Yards

The Southern has installed two-way radio in its John Sevier yard at Knoxville, Tenn., as an aid to humping operations. Initial installations of two-way FM radio between the yardmaster and switch engines have been made on the Canadian Pacific at Toronto, Ont., and Montreal, Que., to expedite the switching of freight traffic in industrial and classification yards. A survey is now in progress on the Grand Trunk Western with a view to determining what benefits can be derived by the installation of two-way radio for use on its switching locomotives in the larger yards.

Two-way radio has proven successful in expediting the handling of cars to and from the Western Maryland's freight station, merchandise piers, grain elevator and coal and ore piers at its Port Covington-Baltimore marine terminal. Two-way radio equipment on the Diesel switchers and in the yard office permits the yardmaster to keep in close touch with crews working in any part of the terminal, as well as in the outside areas.

The Missouri-Kansas-Texas has installed radio equipment for two-way telephone communication between the yardmaster's office and Diesel-electric switch engines used in its yards at Dallas, Tex., and for interchange service and for serving warehouses and industries in a district which extends 14 mi. through the city and suburbs. All switch engines operating in the Armourdale yards of the Chicago, Rock Island & Pacific, at Kansas City, Kan., are equipped with two-way radio to provide communication between the yard office and switching crews. This has done much to facilitate the movement of freight cars and trains through this terminal.

The Long Island and New Haven have facilitated the handling of freight-car floats in New York harbor during stormy and foggy weather by the installation of radar equipment on tug boats. This enables them to maintain their schedules when others are tied up, which is especially important where perishables are involved. Customer relations are thus improved, and damage claims are avoided. Western Maryland tug boats handling car floats and lighters in Baltimore harbor are also equipped with radar.

A substantial improvement in operating efficiency will be afforded by the use of two-way loud-speakers being installed in the Canadian Pacific's yards and freighthouses at Montreal and Winnipeg. Quick and effective communication will be maintained between yardmasters, freight supervisors and their working personnel. The St. Louis-San Francisco is installing a two-way loud-speaker communication system, to be controlled from a central tower, in its new $5,000,000 freight yard at Springfield, Mo. Two-way loud-speaker systems are in service in the Southern's freight yards at Birmingham, Ala., Spencer, N. C., and Inman yard, at Atlanta, Ga., and also in its freighthouse at Birmingham, Ala.

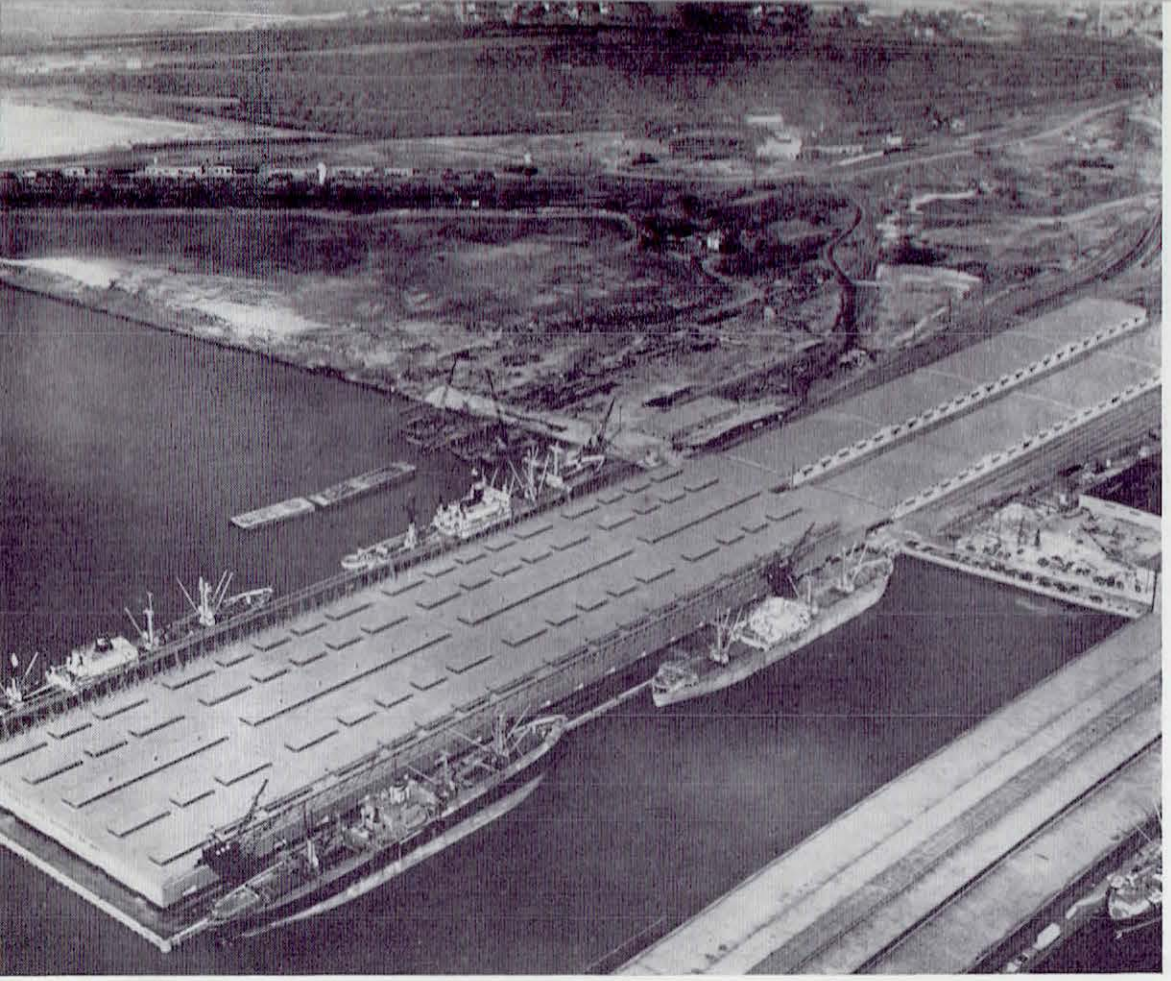
On the Road

The Missouri Pacific has an extensive installation of radio and inductive carrier apparatus on 193 mi. of single-track main line between McGehee, Ark., and Alexandria, La. The project includes apparatus on 15 locomotives and 15 cabooses and in 7 wayside stations, the radio being used for communication between the locomotive and caboose of a train or between trains. The inductive carrier equipment is used for communication between the caboose of a train and the wayside offices.

Culminating an extensive period of testing, the Northern Pacific has announced plans to install end-to-end radio communication on all through mainline freight trains between Yakima, Wash., and Auburn, 139 mi. Radio equipment will be installed on Diesel locomotives and both radio and power units in cabooses. The territory includes the line through the Cascade mountains, where end-to-end communication will facilitate operation, especially under adverse weather conditions.

The Pennsylvania's inductive train communication system on its Middle and Pittsburgh divisions, between Harrisburg, Pa., and Pittsburgh, has proved a valuable aid to operation. This road has also recently ordered equipment for inductive train communication to be installed on 104 mi. of its important single-track freight line between Columbus, Ohio, and Sandusky. This project will include the installation of apparatus on 31 steam locomotives and 28 cabin cars, and in 10 wayside offices. The project is scheduled for completion by early summer and will facilitate the movement of coal on this portion of the route between the mines and the docks on Lake Erie at Sandusky.

The railroads as a whole are thus making a splendid showing in the adaptation of modern communication equipment to effect quicker and more efficient service to their customers—the shippers.



Aerial view of the new $6,000,000 pier opened by the Norfolk & Western at the port of Norfolk, Va., early this year

EMPHASIS ON FREIGHT-HANDLING FACILITIES IN PROPERTY IMPROVEMENT PROGRAMS

Expenditures for betterment of fixed plant, now at highest level for many years, include large amounts for freighthouses, car dumpers, and similar structures

Shippers of freight by rail are profiting by property-improvement programs that, measured by dollar value, are the largest the railroads have carried out in nearly 20 years. According to the Association of American Railroads, the Class I railroads last year spent a total of $298,788,000 for improvements to their tracks and structures—more than in any year since 1930. For the first half of 1948, these same roads, according to estimates submitted to the Interstate Commerce Commission, will make gross capital expenditures to their fixed properties of $144,582,000, an increase of 21.7 per cent over the same period last year.

Toward Better Service

What these figures indicate is that, in spite of soaring construction costs, the railroads are pushing ahead improvement programs designed to make it possible for them to render better service to their patrons—and it is on behalf of the freight shipper, directly or indirectly, that the larger portion of these funds is being spent. For the purpose of showing how the shipper benefits from capital expenditures made by the railroads for property improvements these expenditures can be broken down into a few broad classifications, of which the more important are discussed below.

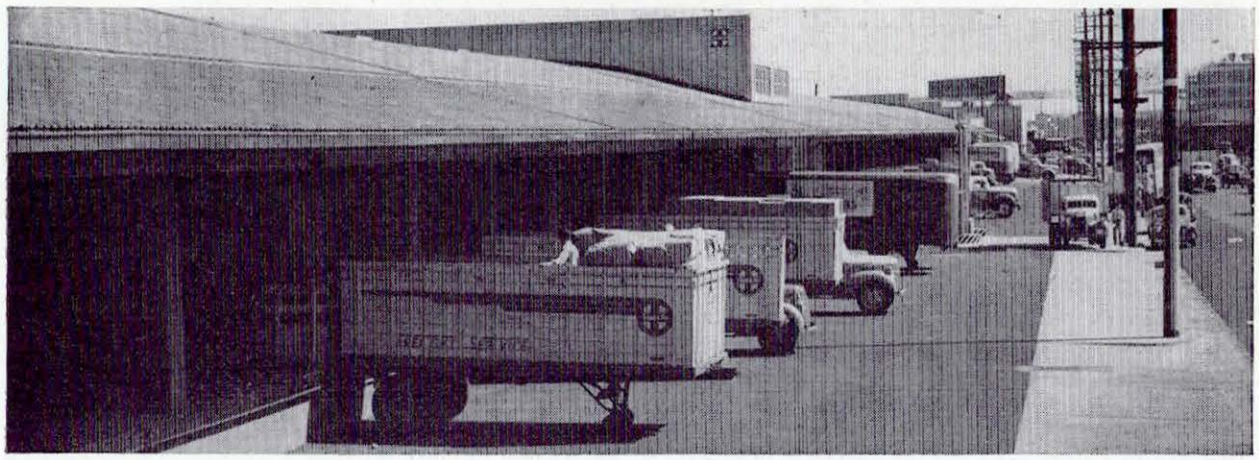
Main-Line Tracks—The standards of track construc-

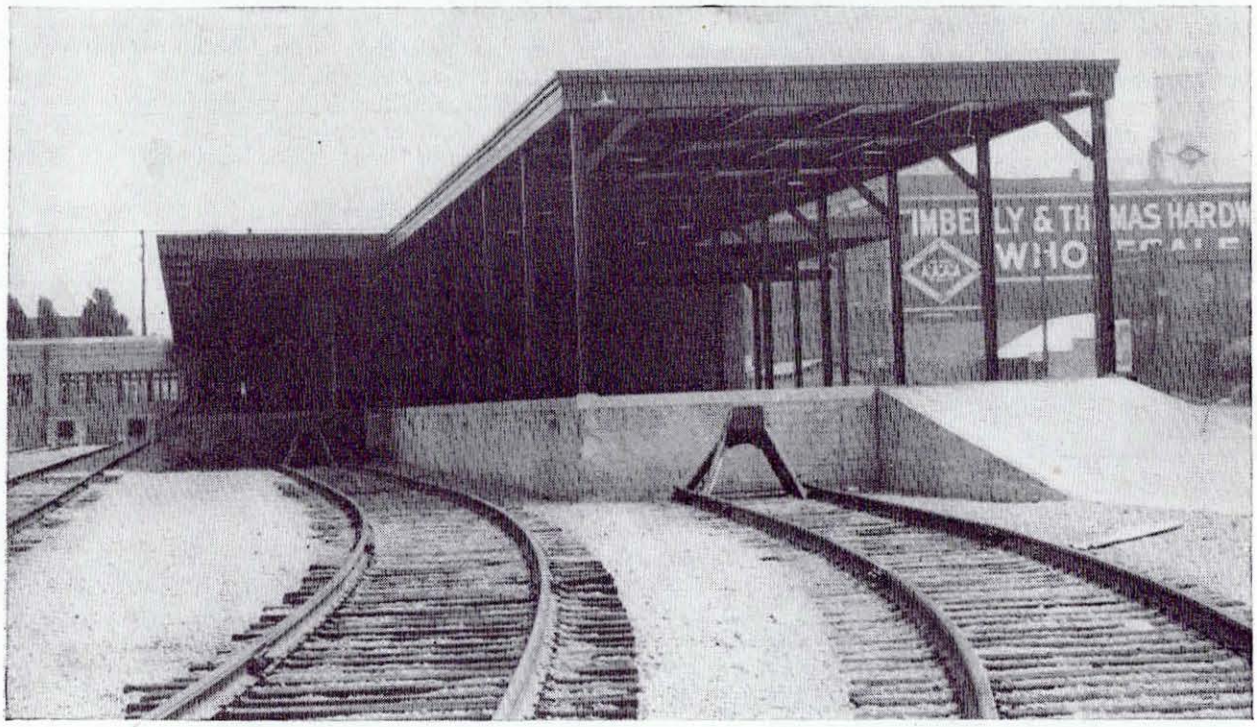
FACING PAGE

Top—Tailboard side of Santa Fe's new freighthouse at Los Angeles. Ample width of driveway permits trucks to maneuver without encroaching on adjacent thoroughfare

Center—Loading and unloading docks of a new freight station opened by the St. Louis-San Francisco at Birmingham, Ala., last year

Below—New freight station of the Northern Pacific at Tacoma, Wash., which was placed in service in 1947





NORTHERN PACIFIC

tion and maintenance out on the line determine to a considerable extent the speed, safety and economy of train operations. Moving heavy loads at high speeds requires modern heavy-duty track supported on a stable roadbed. A measure of what the railroads are doing to provide such track is given by the fact that they spent $44,628,000 for heavier rail in 1947, and $5,141,000 for additional ballast, these expenditures being exclusive, of course, of routine maintenance charges and large expenditures for roadbed stabilization.

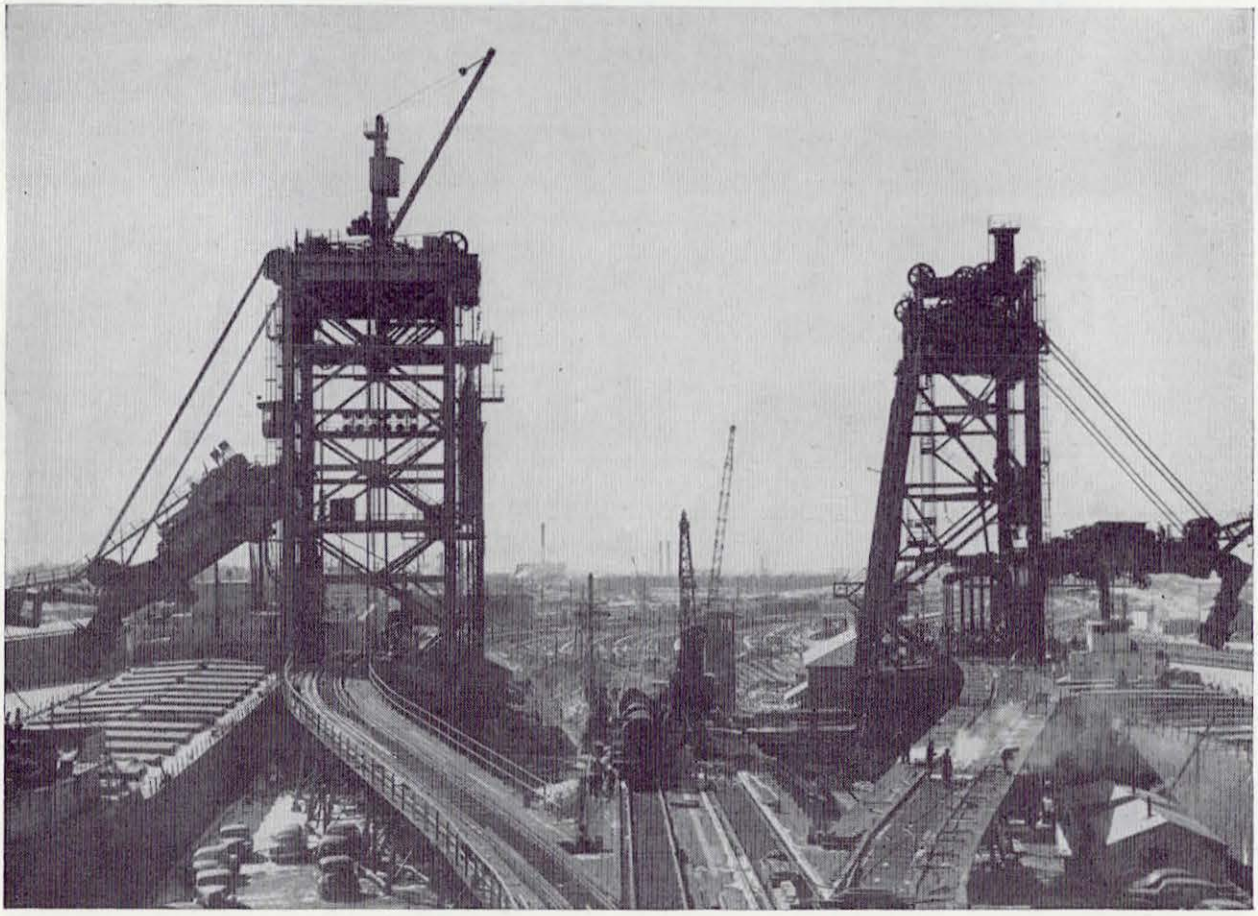
Alinement and Grades—Excessive grades and curvatures not only result in reduced train speeds but are expensive from an operating viewpoint. To overcome such obstacles to efficient operation the railroads are currently making large expenditures for line improvements. Last year, for instance, according to figures compiled by *Railway Age*, 45 projects were in progress at an aggregate cost of $45,000,000, almost twice the expenditures reported for 1946.

Freight Yards—The observation has been made many times that there is little object in "running the wheels off of trains out on the line" if the time thus saved is nullified by delays in terminals. Railroad men are the first to recognize the truth of this statement and to agree that many of their freight yards are afflicted with shortcomings of one kind or another that place a ceiling on their efficiency. That is why they spent $43,792,000 last year for improvement work on yards and sidings—work in which they called to their aid many modern developments in yard design, communication systems, floodlighting, etc., all of which are helpful in getting cars through terminals faster.

Freight-Handling Facilities—Looming with increasing importance in the railroads' plans for better service to shippers are those appurtenances that are provided to aid in the handling of freight to and from railroad cars. In this classification are freighthouses, piers and docks, car dumpers, and ore-handling machines. The work now being done by the railroads to provide better facilities in this category is of such unusual volume and diversification that it is given special, detailed mention later in this article.

Other Improvements—Aside from the types of improvements mentioned above, the railroads are doing a great deal of other betterment work having a direct or indirect bearing on freight service. For instance, the strengthening or replacement of bridges, in many cases to eliminate speed restrictions, went forward at the rate of $26,627,000 last year. Likewise, improvements to shops and enginehouses involved an expenditure of $38,742,000 (including machinery and tools), a large part of this expenditure being required to provide shops and other facilities for repairing and servicing the large numbers of Diesel-electric locomotives now being acquired.

While no breakdown of official figures is available



Construction view of two electric coal-car dumpers included in the $18,500,000 improvement project carried out at Toledo, Ohio, jointly by the New York Central and the Baltimore & Ohio

that shows recent total expenditures for the modernization and enlargement of freight-handling facilities, sufficient information is at hand to indicate that an unusual amount of such work is projected in the railroads' current plans for improving their freight service. For instance, of the work being done to improve facilities for transferring coal and ore from cars to vessels, three projects alone have a combined cost of more than $28,000,000. Further, a compilation made by *Railway Age* shows that, including only projects costing $100,000 or more, the railroads, as a whole, spent more than $5,000,000 last year for the construction or modernization of new freighthouses. In all these undertakings the aim is to place the handling of freight on a more efficient basis by replacing or augmenting inadequate or obsolete structures with modern facilities.

Designers of freighthouses today are quick to combine with time-tested features many innovations calculated to expedite and facilitate the handling of merchandise, the basic aim being to give better service to the shipper. Much attention, for example, is being accorded the need for providing wide paved drives along loading and unloading platforms in order that highway vehicles will have ample space for maneuvering into position, without interference with or by through traffic.

More Light for Night Work

To speed the handling of merchandise at night emphasis is being placed on better lighting along platforms and under canopies, and an increasing practice is to provide electrical receptacles along both tailboard and track-side platforms so that extension cords can be used to light the interiors of trucks and cars. The use of fluorescent fixtures for lighting both freight-handling rooms and office space is still on the increase, and it is now widespread practice to install floodlights for illuminating driveways and other outside areas. Pneumatic tube systems for transferring paper forms are also coming into more common use.

Among the latest aids to efficient freighthouse operation are modern intercommunication systems by means of which, through the use of loud-speakers and talk-back stations, the various activities, including the dispatching of mechanical equipment, are subject to close control from a central point. Another feature that has become almost a standard accessory in new freighthouse lay-outs is the vertical lift bridge for spanning tracks that separate platforms, permitting increased flexibility in the operation of mechanical-handling equipment. The role of such equipment in modern freighthouse operation is dealt with in a separate article in this issue.

Some of the Larger Jobs

A brief summary of some of the more important freighthouse enlargement, modernization and construction jobs carried out by the railroads recently will afford convincing testimony of the strenuous efforts being made to bring such facilities into line with present-day requirements. Among the jobs completed last year, the Atchison, Topeka & Santa Fe built a large new freighthouse at Los Angeles, Cal., (for details see *Railway Age* of March 6, 1948); the Pennsylvania constructed two freighthouses at New York; a new freighthouse was built at Waycross, Ga., by the Atlantic Coast Line, at a cost of $176,000; the Chicago, Burlington & Quincy spent $137,000 to make additions to the dock unloading spaces at a freighthouse at Chicago; and the Illinois Central made improvements costing $119,000 to its pier freighthouse facilities at South Water street, Chicago. In addition, the Northern Pacific did extensive work involving the improvement of freighthouse facilities at three locations, namely, Billings, Mont. ($385,000), Missoula, Mont. ($205,000), and Tacoma, Wash. ($173,000).

The project that the Northern Pacific has carried out at Billings is an example of an undertaking involving the provision of new and larger facilities, incorporating part of the existing freighthouse which was remodeled extensively in accordance with present-day practices and needs. The improved facility at Billings consists of a 50-ft. by 118-ft. office, a 50-ft. by 74-ft. new freighthouse, 50 ft. by 252 ft. of remodeled and improved freighthouse, and a new enclosed platform 400 ft. long, making a building having a total length of 844 ft. In addition, the structure includes a 12-ft. by 200-ft. new covered platform at one end and a 14-ft. by 720-ft. new covered island platform between two of the freighthouse tracks. Aside from completely modern construction in every respect the new facility includes fluorescent lighting, an air-conditioning system in the office space, a pneumatic tube system connecting the general office and the warehouse foreman's office in the remodeled portion of the freighthouse, and a sawtooth platform, with 23 cut-ins, for the new enclosed platform.

Activity in the Southwest

Among the largest freighthouse improvement or construction projects now under way is one on the Texas & Pacific at Dallas, Tex., which will provide a new freight terminal in the Trinity industrial district at a cost of $1,500,000. Work on this project was started April 1. Another large project just getting under way is one involving the construction by the Missouri Pacific of a new freight station at Laredo, Tex. No cost figures are available on this job but an indication that it is of substantial proportions is afforded by the fact that the new building will be 74 ft. by 660 ft. in plan and will contain some 49,000 sq. ft. of floor space.

Included among the current improvement programs of the railroads are various special facilities designed to meet the needs of particular types of groups of shippers. For instance, last year the Pennsylvania completed the construction of three pool-car freight stations, two at Chicago and one at Detroit. Another example of special freight-handling facilities is a car unloader that the Chicago & North Western built at a grain elevator at Council Bluffs, Iowa, at a cost of $236,955. Also, the Baltimore & Ohio recently completed a new freighthouse at Chicago, which was designed and built especially for use by a freight-forwarding company.

As indicated, the railroads' improvement programs have been characterized recently by intensive activity in connection with the provision of enlarged and modern-

ized facilities at ports, both on the Great Lakes and at other water-front points, for transferring goods between railroad cars and seagoing vessels. This activity has been particularly noticeable with reference to facilities for handling coal and ore. The largest job in this category is one that the New York Central and the Baltimore & Ohio have carried out jointly, through a subsidiary, at Toledo, Ohio, at a cost of $18,500,000 (for details see *Railway Age* of May 1). When completed, the new and improved facilities at Toledo, built at the mouth of the Maumee river on Lake Erie, will include three electric coal-car dumpers, two electric ore-unloading machines, supporting yards having a total capacity of 5,400 cars, and other auxiliary facilities. By consolidating existing separate facilities of the two railroads in a location more accessible to boats than previously, this project will bring major benefits to the coal and ore industries.

Project at Lorain

Also aimed at providing better service for coal shippers is a somewhat similar, though smaller, project that the Baltimore & Ohio has carried out at Lorain, Ohio, at a cost of $4,500,000 (see *Railway Age* of January 31 and May 8, 1948). In this project the railroad built two new earth piers at the mouth of the Black river, also on Lake Erie, and on one of these provided a modern coal-car dumper of the lift-and-turnover type. Having a capacity of a car a minute, this new dumper replaces a steam-operated coal dumper, installed in 1908, which was located approximately 1½ mi. inland. In the same category of improvement projects is one now under way on the Chesapeake & Ohio involving the construction, at Newport News, Va., of a new low-level coal pier at a cost of more than $5,000,000.

The Atlantic seaboard is also the scene of the construction by a railroad of one of the largest merchandise piers in the world. Located at the port of Norfolk, Va., this facility was constructed by the Norfolk & Western at a cost of $6,000,000. Formally opened on February 12 of this year, the new structure, known as Pier N, is 390 ft. wide and 1,100 ft. long, covering an area over water of approximately ten acres. Placed on the concrete dock of the pier is a shed of steel construction, 320 ft. wide and 1,050 ft. long. The facility is served by six tracks, including two in the center of the shed, which are depressed for convenience in loading and unloading cars, and two on each apron along the sides of the pier.

Special Facilities at Ports

Some of the features of Pier N include modern fireproof construction, 52 electrically-operated doors spaced about 50 ft. apart on the sides of the pier, five-ton cargo masts, or "house falls," on each side extending the length of the pier, two 15-ton revolving gantry cranes, four motorized winches on each side for spotting freight cars, a supporting yard having a capacity of 535 cars, and two vertical-lift bridges spanning the depressed tracks inside the pier shed.

Continued activity has also been noticeable in the provision of special facilities at tidewater ports for handling particular commodities. A recent example of this type of activity is the construction by the Baltimore & Ohio at Locust Point, Md., at a cost of $119,000, of facilities for handling bananas from vessels to railroad cars. Still another example is the phosphate rock loading facilities of the Seaboard Air Line, completed recently at Tampa, Fla., at a cost of approximately $500,000.

These and the other examples given reflect the progressive attitude of the railroads toward the need for keping their freight-handling facilities up to date, as well as all other elements of the fixed properties. Since all of these improvements are made for the purpose of putting the railroads in a position to serve their customers better, the latter are the ultimate beneficiaries.

Freight Service Survey

(Continued from page 151)

Southern Pacific received 20 Diesel-electric road freight locomotives and 23 switching locomotives. Nearly five miles of trackage and a new yard office were located within the yard limits of Los Angeles, making possible improved handling of traffic to and from that area. A new car-a-minute icing facility has been completed at El Paso, Tex. This new plant and others which have been improved will increase the car icing capacity of the S.P. by more than 13 per cent.

Texas & Pacific—Overnight l.c.l. freight service with first-morning delivery is accomplished to many points up to 420 mi. distant through the coordination of service provided by freight trains, passenger trains, and highway trucks of the T.&P. Motor Transport. Train No. 53 makes the 395-mi. run from Dallas, Tex., and Fort Worth to Monahans overnight, with connecting truck service to Hobbs, N.M., Wink, Tex., and Kermit. Passenger train No. 2 between El Paso, Tex., and Monahans, and No. 21 between New Orleans, La., and Shreveport, handle l.c.l. freight in baggage cars. No. 2 connects at Monahans with motor trucks for Eunice, N. M., Hobbs, and Big Spring, Tex., providing first-morning delivery. Total tonnage handled during 1947 amounted to 19,784,206, an increase of almost 24 percent over the figure for 1946. An unprecedented demand for crude oil, far in excess of pipe-line capacity, brought a movement of approximately 9,000 cars a month to the T.&P. during the last half of 1947 and the first months of 1948. Work is in progress on a new freight station at Dallas, which is planned to facilitate the handling of expanding traffic at that point.

1947	42,070
1946	42,303

Toledo, Peoria & Western—The T.P.&W. describes the year from May, 1947, to May, 1948, as "a year of rebirth." Road operations have been 50 per cent Dieselized. New schedules have been developed in coordina-

tion with connections. In order to provide better service from eastern origin points for Peoria receivers, the T.P.&W. has arranged with a large carloading company for the use of the Peoria freighthouse, and, as a result, l.c.l. business from the Eastern seaboard will receive fourth or fifth-morning delivery at Peoria with no transfer delays en route.

Union Pacific—Livestock dispatch service between Ogden, Utah, Salt Lake City, and Los Angeles, Cal., has been placed on a 30-hr. schedule for the 821-mi. run. The trains are Diesel powered, and special cars, equipped with roller bearings, AB brakes and bolster snubbers, and aluminum painted to reflect the heat and reduce the inside temperature, are used in the service. Railroad-operated pick-up and delivery service for l.c.l. freight, in place of contract service, has been established at Omaha, Neb., Grand Island, Kearney, Denver, Colo., Salt Lake City, Utah, Portland, Ore., and Salina, Kan. Railroad-trained dispatchers handle pick-up calls and assigned drivers make the pick-ups and deliveries. A controlled flow of merchandise to and from cars and vehicles has provided more fluid freighthouse conditions and has helped in the reduction of loss and damage.

1947..51,063
1946..47,884

Virginian—During January and February the Virginian took delivery of four 6,800-hp. electric locomotives. The new locomotives are rated at a maximum speed of 50 m.p.h., and are designed to expedite the movement of heavy trains over the electrified portion of the Virginian's main line to the port of Norfolk.

Wabash—A number of through merchandise cars have been established to eliminate transfers. Fifty 50-ft. box cars are being equipped with utility loaders and will be assigned to l.c.l. service as well as carload traffic. Overnight merchandise service is maintained between St. Louis, Mo., Kansas City, Ft. Wayne, Ind., and Chicago, between Chicago and Detroit, Mich., and between Detroit and Buffalo, N. Y.

1947..44,994
1946..43,588

Western Maryland—A two-way communication system between the yard office and switching locomotives at Port Covington (Baltimore), Md., marine terminal has proven very successful in expediting the handling of cars to and from the freight station, merchandise piers, grain elevator and coal and ore piers located at that point. Tugs handling car floats and lighters have been equipped with radar, so that on-time performance, even under severe fog conditions, is possible.

1947..30,575
1946..31,133

Western Pacific—The on-time performance of freight schedules has been stressed and very substantial improvement has resulted. In addition to an installation of centralized traffic control through the Feather River Canyon from Oroville, Cal., to Keddie, during the last year C.T.C. was installed from Niles to Stockton, 62 mi., greatly expediting the movement of trains over that district. Further construction, which will make C.T.C. continuous from Oakland to Keddie, is in progress.

1947..54,392
1946..47,796

Heavy Traffic, High Costs

(Continued from page 142)

shipment minima, by which it was assured of winning a large amount of traffic from competing truckers, has now found that it would handle such competitive traffic at a prohibitive loss, even if it could get it, and that, indeed, much of its present l.c.l. business is handled at an out-of-pocket loss. It is presumably for this reason that carriers in Official territory have asked the I.C.C. to approve increases of l.c.l. rates ranging up to more than 100 per cent, in inverse proportion to length of haul, which would have the obvious effect of removing some short-haul business from the rails entirely.

Terminal Costs Are Higher

The Pennsylvania, in a large advertisement placed in newspapers throughout its territory, directed attention to the fact that "terminal costs are as great for the short haul as the long—whether you ride 5 miles or 500 miles, whether you ship 60 miles or 600 miles." The road pointed out that its terminal expenses have increased 136 per cent since 1939. As a solution to the problem, the ad proposed that "those who travel or ship short distances should bear a more proportionate share of terminal costs." This is perhaps the first time that an American railroad has publicly proposed the exaction of terminal charges distinct from road-haul charges for general freight traffic, although the custom has been ingrained in European tariffs for years. Shippers in this country have invariably expressed opposition in response to informal suggestions of two-basis rate-making.

Meanwhile the railroads are attacking the problem of terminal costs — as they have always countered most rises in expenses — by technological advances and improved operating techniques. Another article in this issue sets forth the progress which is being made in the mechanization of freight handling. At the request of shippers there is published herewith as another "Freight Progress" feature a list of freight stations, transfers and piers where the railroads are equipped to handle "unitized loads," thereby saving both themselves and the shippers handling costs. The railroads are old hands at the use of fork-lift trucks and other modern handling machinery in their own stores and shops, and they are fully aroused to the expense and time-saving benefits of their use. The carriers are also increasing the number of overhead merchandise cars to avoid transfer handlings and are redesigning freight stations for the most effective movement of l. c. l. less-carload.

Improving Supervision

The railroads are making every effort to increase the effectiveness of their supervisory forces—a "must" in improving and cheapening terminal operations. A number of roads have elaborate education programs—some directed by professionals, others by well-trained and well-chosen railroaders—which are designed not only to educate supervisors, but to give the "feel of management." To this end, most of the programs emphasize the discussion-participation approach to learning.

During the past 12 months the I.C.C. has dribbled

out successive freight rate increases, termed "interim" adjustments, in partial response to the railroads' petition in Ex Parte 166 for a permanent increase averaging 30 per cent overall — 41 per cent within Eastern territory and interterritorially between that region and other territories, and 31 per cent within and between Southern and Western territories, subject to such exceptions as cents-per-100-lb. increases and maximum limitations on percentage increases.

On July 3, 1947, the carriers asked for general increases of 25 per cent in Official territory and interterritorially between that territory and other territories, and 15 per cent within and between Southern and Western territories, which, with the exceptions, would have produced an average increase for the country of about 17 per cent. On September 5 the railroads filed a supplemental petition to boost the increase to an average of 27 per cent, following an arbitration award of increased wages. On October 6, the I.C.C. granted a temporary 8.9 per cent increase, uniform throughout the country, which was made effective October 13. Early in December the railroads further modified their Ex Parte 166 plea to seek permanent increases averaging 30 per cent overall, or 3 per cent more than previously, coincident with wage increases to some operating employees. This plea, as noted, still remains before the commission.

On December 29, 1947, the I.C.C. granted a second overall interim increase of 17.5 per cent to replace the 8.9 per cent interim boost. This was made effective January 5. Finally, on April 19, the commission authorized a third interim increase averaging 21.4 per cent overall, supplanting the boost of January 5. Unlike the previous interim grants, however, which were uniform in all territories, the latest interim increase is 30 per cent within Eastern territory, 25 per cent within Southern territory, and from, to and within zone 1 of Western territory, and also interterritorially, and 20 per cent within the remainder of Western territory. The annual yield of the Ex Parte 166 increases thus far is estimated by the commission staff at $1,535 million above that of the rates in effect before the first of such increases were made effective in October, 1947.

In general, shippers did not oppose the railroads' quest for higher revenues with which to meet costs which rose by much greater percentages. At its annual meeting last fall, the National Industrial Traffic League took a neutral stand on the carriers' petition, holding that the roads as a group were in need of additional revenues, the extent of which it left to the commission to decide.

There is talk of the railroads "pricing themselves out of the market," and, since rate increases do abnormally affect the producer distant from markets, there may be a limited drying-up of this class of traffic. On the other hand, costs of other types of transportation have increased too, including private trucking and barging, and, according to railroad testimony in Ex Parte 166, it is "the considered judgment" of their chief traffic officers that the additional increases will not result in any "appreciable diversion" of traffic. As for the effect on the ultimate consumer, it is a demonstrated fact that the increase in rail transport cost produces negligible rises in retail prices in comparison with increases by producers and distributors. In the great majority of cases, increases in freight rates do not affect retail prices at all. The cost of railroad transportation for a suit of clothes is less than the cost of the buttons.

The railroads' average revenue per ton mile has broken over the one cent line for the first time since 1932 — being 1.076 cents in 1947, compared with 0.978 in 1946. The average revenue was 1.263 cents in 1921.

Export Traffic

The railroads are playing a vital role in the movement of the tremendous export traffic resulting from government loans, relief programs and private expansion of overseas markets. In fact, it might be said that very little of it could be moved successfully without their services. Shippers depend upon the roads not only for actual movements of the goods, but as well in many cases for transferring them to shipboard at seaboard, for advice on proper packing for overseas movement and for aid in preparing the necessary papers. Only transportation systems with private communications systems and widespread traffic staffs can give the shipper late information on sailing dates, arrival of goods at port and other necessary notifications.

A number of roads serving ports own and operate large car-to-ship facilities and render complete service through to ship's hold. They and other lines have expanded foreign traffic staffs equipped to render every type of service that could be sought. The Canadian systems, with their own steamship lines, render probably the most complete overseas freight service in existence. For the many producers who are entering the foreign market for the first time, the help of transportation companies experienced in the intricacies of overseas movement is a godsend.

War Traffic Reparations

A large number of the roads face bankruptcy if the federal Department of Justice contentions should prevail that they overcharged the government for the wartime transportation of numerous categories of shipments. The department is seeking reparations amounting to about $2 billion, plus interest, in numerous complaint proceedings before the I.C.C., despite the fact that most of the commodities in question moved at rates below standard, in accordance with section 22 quotations filed with, and accepted by, the government agencies which offered them for transportation. Realizing that payment of the reparations by the railroads would "lay a heavy burden" on all shippers using the railroads, the National Industrial Traffic League has asked the commission for permission to intervene in opposition.

Although all of the department's allegations rest on a manifestly shaky foundation, the railroads are leaving no stone unturned in the preparation of their opposing presentation.

It is estimated that the freight loss and damage claims bill of the railroads for 1947 will be at least $115 million. The all-important ratio of claims payments to total freight revenues reached 1.66 in the first half of 1947 and is believed to have been even higher in the second half. Articles in this issue summarize the extraordinary effort the carriers and their customers are making to whittle down this mutually damaging waste.

Shippers, Management and Labor

(Continued from page 137)

are car and locomotive shortages, aggravated by avoidable detention and delayed movements, particularly at terminals. But lowered productivity of labor and insufficient supervisory personnel are also important contributing factors. Present performance is causing favorable public opinion toward railroads to decline. This trend must be checked by prompt improvements in all classes of service.

What Needs to Be Done

Unquestionably, the railroad plant must be rehabilitated and modernized for operation at new standards of efficiency and economy. But the process will take time. In the meantime, the best possible use must be made of existing equipment and facilities. Shippers are not unmindful of the problems that confront railroad management and they appreciate the efforts that are being put forth to rectify present unfavorable conditions, but there is a growing feeling that more can, and should, be accomplished.

Original optimism concerning the car building program is now clouded by speculation as to the possible hampering effect of the rearmament and European relief programs, which undoubtedly will add to the traffic burden and may reduce the amount of steel available for freight car construction. At best, necessary retirements will probably be not less than 50 per cent of new car construction and the rolling stock replacement program will extend over a period of five years.

Under these circumstances, the capacity to handle the present and prospectively greater volume of traffic must be found in better utilization of present facilities. The situation requires the best efforts and cooperation of railroad management, railroad labor and the shipping public.

In 1940, a prominent transportation economist predicted that the capacity of the railroads would be insufficient to accommodate the expanding national economy and to handle an anticipated average annual volume of one billion tons which it was expected would be originated in the decade of 1950. Yet the railroads actually handled a greater volume than that during each of the war years and without serious traffic congestion or delays. This job was accomplished by the cooperation of shippers, railroad management and labor, which resulted in more effective use of equipment and more efficient operation. There is every indication that, even under present conditions, the railroads still have a substantial reserve capacity which can be developed by additional cooperative efforts, particularly on the part of railroad workers.

Cooperation between shippers and carriers began with the organization of shippers' advisory boards in 1923 and was implemented during the war by the formation of vigilance committees, which are still active. This retention has resulted in prompt release, heavier loading and more efficient overall use of equipment.

We may not be fully advised, but we know of no similar degree of cooperation between railroad management and railroad labor organizations. Yet, railroad employees—particularly operating men—have the most to do with the effective functioning of the railroad transportation system. From the time a car is loaded by the shipper until it is placed for unloading by the consignee, it is in the hands of operating employees. If the service is good, most of the credit goes to them, but if, as at present, the service is bad, they must also accept most of the responsibility. It is clear that better performance by labor is required to bring about more efficient operation of the railroad system. This being so, it seems appropriate to suggest that railroad management seek and be given the cooperation of the railroad unions. Railroad labor is in a position to make the greatest contribution toward solution of the present transportation problem.

Railroad labor has a great stake in efficient operation of our railroads, and labor unions could accomplish a great deal in setting up machinery to cooperate with management in the handling of traffic and thus provide the public with regular, dependable service. Much could also be accomplished in eliminating the rough handling, which is causing part of a loss estimated at $150 million a year.

Shippers expect to pay transportation rates which will return operating costs and allow a fair margin of profit, provided the carriers conduct operations with maximum efficiency and economy. But when, as in the present period, operating costs show a continuing tendency to rise, avoidable waste or inefficiency becomes increasingly intolerable. General rate increases of serious proportions always result in loss of a portion of the traffic through decentralization or relocation of industry, changed methods of distribution, diversion to other forms of transportation and other processes well understood by railroad traffic men. The higher the level of rates, the greater will be the loss of traffic. It is, therefore, suggested that there be developed a three-way cooperative program embracing shippers, management and railroad labor. Each group is vitally interested in transportation service and in maintaining private ownership and operation.

The Competitive Picture

Future conditions in transportation cannot be predicted with accuracy. The conditions which ultimately prevail will be influenced by the attitude of the public, the plans and policies of carrier managements, the cost and efficiency of labor, and by legislation and regulatory administration, among other factors.

The present situation lacks clarity. As a result of the high rate of production of motor vehicle equipment, the trucking industry has largely been reconditioned and seems to be expanding, due in part to present disabilities of the railroads. But the competitive position of rail lines should improve as modernization and rehabilitation progress. The boat lines are attempting to reestablish services, but seem to be confronted with disproportionate increases in operating costs.

There is little doubt that the present tempo of economic activity is fostering unsound conditions in transportation which cannot be perpetuated when business returns to a more normal level. At present, the relative fitness and economy of the different forms of transportation are obscured in many ways. There are differences in physical condition. Obvious, but

indefinite, changes in relative costs of operation have occurred. There continues an inequality of treatment of the different modes of transportation from the standpoint of taxation and subsidization. Industry has resorted to changed shipping practices of a temporary character in meeting present abnormal conditions. Rate structures of questionable soundness in the first instance have been made more unsound by horizontal increases designed to meet emergency revenue needs.

To the extent that they offer inherent advantages, all forms of transportation are needed. The public interest requires, and the national transportation policy contemplates, that the benefits of each mode of transportation shall be preserved as a necessary part of the overall transportation system required by the commerce of the country and the national defense. Under the system of free enterprise, the desired result can be accomplished only through sound planning, the avoidance of wasteful or destructive competition, and the removal of all vestiges of subsidization or unequal treatment in the way of regulation or taxation. Also, it seems clear that comprehensive rate structure revisions, giving greater weight to the conditions actually prevailing in the different types of transport, are required, if financially sound transportation is to be promoted and the public interest is to be best served.

Must Avoid Uneconomic Growth

While the country must have a sufficiency of transportation facilities, we must guard against any tendency toward excessive or uneconomic expansion. Private enterprise, with the aid of sound regulation, is expected to operate in such a way that each type of carriage will fall into its natural orbit of economic utility, as an integral part of a system of transportation which will offer the most in efficiency and economy, make full use of technological improvements, and gear itself to the country's needs in adequacy, but without a surplus of facilities. If this result is finally to be approximated, constructive thinking, sound policies and action are required of all concerned.

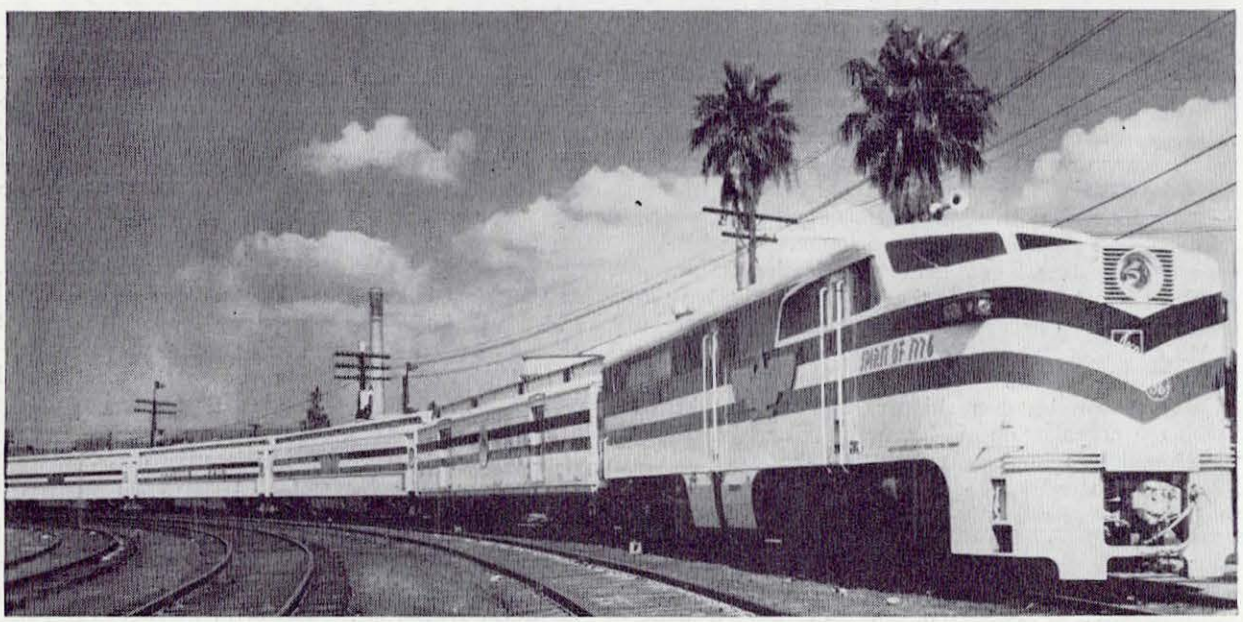
Stretching Cars

(Continued from page 166)

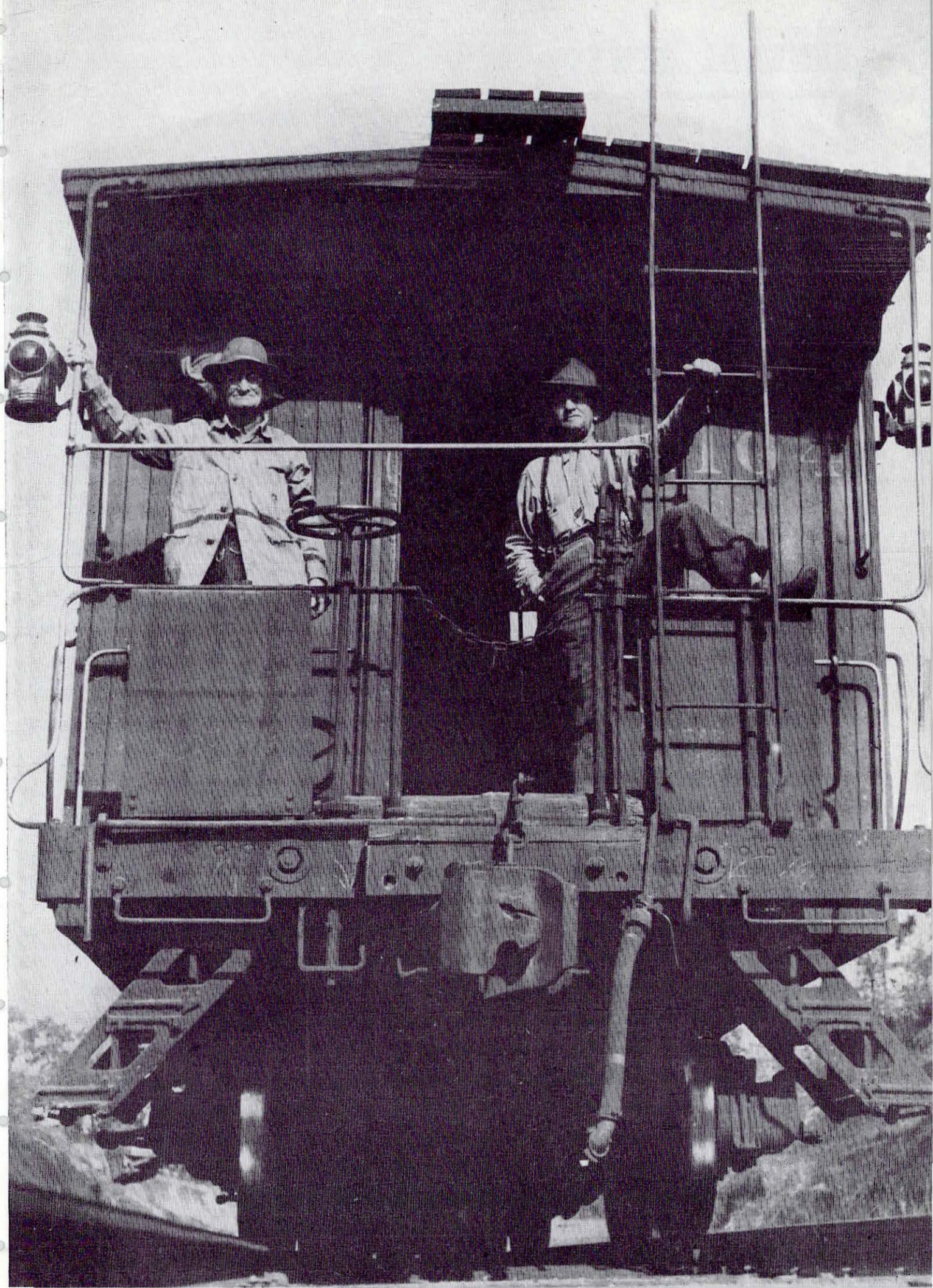
information for the railroads in the proper distribution of their cars by number and type. The "backbone of the boards," the quarterly estimates, have been amazingly accurate over a long period. During the war some of the boards made forecasts not only for a quarter year in advance, but six months ahead, to the great strategic advantage of the railroads and the Office of Defense Transportation. Active consideration is being given to increasing the number of classifications in the estimates which may, in the opinion of some, enhance their value.

"Vigilantes" Still Ride

Still functioning are the "vigilance" or "car efficiency" committees which scan reports of undue delays to cars by fellow shippers and receivers and call upon the worst offenders for improvement. Work on these "F.B.I. squads" is voluntary, unpaid and time-consuming. Also, it does at times alienate business associates on whom "the heat is applied," now that the stress and patriotic fervor of war are gone. Yet it is believed that shippers, in the long run, best serve their own interests by preserving the committees in full vigor until cars may be used in more cavalier fashion. It is significant that 888 car efficiency committees were still functioning as of September 1, 1947, representing but a slight reduction under the number reported a year earlier.



One of the most valuable cargoes carried by the railroads in 1947 were the documents entrusted to the "Freedom Train"



GENERAL NEWS

Hold-Out Op Leaders Call Off Strike; Court Order Follows Government Seizure

Having refused to yield to persuasion, union heads' obduracy weakens when threatened with treatment John L. Lewis got

Complying with a restraining order which the government obtained from Justice T. Alan Goldsborough in the United States District Court for the District of Columbia, after President Truman had taken over the railroads, the chief executives of the three hold-out operating unions announced late on the night of May 10 that the strike set for 6 a.m. the following morning would be cancelled. "The three brotherhoods," the capitulation announcement said, "will comply with the judge's order and steps to that effect are being taken immediately." The unions involved are the Brotherhood of Locomotive Engineers, headed by Grand Chief Engineer Alvanley Johnston; the Brotherhood of Locomotive Firemen and Enginemen, headed by President D. B. Robertson; and the Switchmen's Union of North America, headed by President A. J. Glover.

The restraining order was obtained by the Department of Justice at the request of Secretary of the Army Kenneth C. Royall, to whom President Truman assigned the job of operating the carriers in the seizure order which was issued at 12:00 o'clock noon, Eastern Standard Time, on the 10th, and became effective immediately. The restraining order will remain in effect until May 19, the date set by Judge Goldsborough for hearing on the request for a permanent injunction which was also sought in the government petition. Judge Goldsborough is the same justice who has twice imposed heavy fines on President John L. Lewis of the United Mine Workers of America in government injunctive proceedings growing out of strikes of coal miners.

Secretary Royall requested Attorney General Tom C. Clark to apply for the injunction after he had conferred with the union leaders on the afternoon of the 10th and had been told by them that they would not cancel the strike call. "This afternoon," said a statement issued by the secretary, "I conferred with Mr. Johnston of the Locomotive Engineers, Mr. Robertson of the Locomotive Firemen and Enginemen and Mr. Glover of the Switchmen's Union. I called attention to the Executive Order instructing me as secretary of the army to operate the railroads, and requested that members of the respective unions continue on the job and that the strike set for tomorrow morning be cancelled. I was informed by Messrs. Johnston, Robertson and Glover that they would not issue instructions or make recommendations that the strike be called off and that the men continue on the job after the hour set for the strike. Therefore, I was constrained to forward the statement to this effect to the attorney general and requested that an injunction be applied for."

Attorney General Clark followed promptly to have the petition brought before Judge Goldsborough who issued the restraining order in his chambers after regular court hours. The attorney general's petition, called "Complaint for Injunctive Relief," cited the accompanying affidavits by Director J. Monroe Johnston of the Office of Defense Transportation and Postmaster General J. M. Donaldson in support of its contentions that the strike, if permitted to occur, "will deprive the country of essential transportation service and will greatly obstruct the flow of interstate commerce and the transmission of the mails of the United States." It was further averred that a walk-out would "imperil the national health and safety," and "interfere with and obstruct the effective performance and discharge of vital and necessary governmental functions" and "frustrate the powers conferred by the Constitution and by acts of Congress upon the executive branch of the government.

President Truman issued his seizure order after Dr. John R. Steelman, one of his assistants, had failed, in mediatory efforts extending over several days, to bring about a settlement of the wage and rules dispute arising out of the refusal of the three union leaders to accept the report of an emergency board which recommended for the members some changes in working rules and the same 15½ cents per hour wage increase accepted by unions representing other employees.

The President based his seizure order on the act of August 29, 1916, which authorizes him to take over "in time of war . . . through the secretary of war." In a statement accompanying the order, the President called upon "every railroad worker to cooperate with the government," and "upon the officers of the railroad labor organizations to take appropriate action to keep their members at work."

Secretary Royall announced the designation of Major General Edward H. Leavey, the Army's chief of transportation, as his agent "for implementation of the Department of the Army's action in operation and control of the railroads under the Executive Order." In another statement, the

STATEMENT BY THE PRESIDENT OF THE UNITED STATES—May 10, 1948

I have today by Executive Order taken over the country's railroads and directed the secretary of the army to operate them in the name of the United States government.

The strike has been called for 6 a.m. tomorrow by three of the twenty-two railroad labor organizations — the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, and the Switchmen's Union of North America. These three have declined to accept the findings and recommendations of an emergency board created by the President under the Railway Labor Act. In the strike situation thus confronting us, governmental seizure is imperative for the protection of our citizens.

It is essential to the public health and to the public welfare generally that every possible step be taken by the government to assure to the fullest possible extent continuous and uninterrupted transportation service. A strike on our railroads would be a nationwide tragedy, with worldwide repercussions.

I call upon every railroad worker to cooperate with the government by remaining on duty. I call upon the officers of the railroad labor organizations to take appropriate action to keep their members at work.

The Executive Order I have issued provides that, until further order of the President or the secretary of the army, the terms and conditions of employment now in effect on the railroads shall continue in effect, without prejudice to existing equities or to the effectiveness of such retroactive provision as may be included in the final settlement of the dispute between the carriers and the workers.

secretary said that in assuming the task of operating the carriers, he was relying on the cooperation of railroad labor and management and of the entire public, "for only through the united efforts of all our population can the task be successfully performed."

Dr. Steelman's conferences with the chief executives of the three hold-out unions and representatives of the carriers began at the White House on May 7 after Chairman Frank P. Douglass and Francis A. O'Neill, Jr., of the National Mediation Board had reported to the presidential assistant on their unsuccessful effort to bring about a settlement in their recent Chicago conferences with the parties. Dr. Steelman's meetings in Washington with the labor leaders and management representatives began on May 7 and continued after the seizure order was issued and included night and Sunday sessions. Management was represented at the Steelman conferences by W. T. Faricy, president of the Association of American Railroads, and Daniel P. Loomis, H. A. Enochs and C. D. Mackay, chairmen, respectively, of the western, eastern and southeastern conference committees.

Throughout the negotiations the carrier representatives persisted in their refusal to go beyond the emergency board's recommendations (see *Railway Age* of April 3, page 47). This was indicated in a statement made on May 8 by A.A.R. President Faricy. "If there is a nationwide strike," Mr. Faricy said, "the responsibility for the catastrophe will rest squarely on the shoulders of the leaders of the three unions representing only 10 per cent of the railway employees who refused to follow the recommendations of the President's emergency board—recommendations which have been followed by the other 90 per cent of the industry."

President Truman's seizure order directs Secretary Royall to arrange for the operation of the railroads "in such manner as he deems necessary to assure to the fullest possible extent continuous and uninterrupted transportation service." It authorizes him to delegate "such of his authority as he may deem necessary or desirable," and directs him to permit the managements of the carriers "to continue their respective managerial functions to the maximum degree possible consistent with the purpose of this order."

Other provisions stipulate that existing contracts and agreements shall remain in effect; and that the railroads "shall be managed and operated under the terms and conditions of employment in effect at the time possession is taken under this order, without prejudice to existing equities or to the effectiveness of such retroactive provisions as may be included in the final settlement of this dispute between the carriers and the workers." The secretary is also "authorized to furnish protection for persons employed or seeking employment in or with the transportation system of which possession is taken hereunder."

The present seizure marks the third time within a period of five years that a strike threat growing out of a wage controversy has brought on government control of the railroads. The carriers were previously under control of the secretary of the army's predecessor, the secretary of war, during the period from December 27, 1943, until January 18, 1944, when they were taken over by the late President Roosevelt. That seizure resulted from a strike threat by the unions other than the B. of L. E. and Brotherhood of Railroad Trainmen. Two years later, however, in May, 1946, those two unions were involved in the two-day strike which occurred despite the fact that President Truman had taken over the roads. O.D.T. Director Johnson had the operating job at that time, the period of government control lasting nine days.

Operation by Secretary Royall is expected generally to conform to the plan employed during the December, 1943-January, 1944, period of War Department control. As noted elsewhere herein, he has set up an organization to run the railroads during the period of federal control, giving commissions as Army colonels to seven railroad executives whom he has appointed regional directors to serve under General Leavey. The secretary said at a May 11 press conference that he wants to keep this organization set up and does not want to get into the details of railway

TEXT OF THE RESTRAINING ORDER

The restraining order was issued by Justice T. Alan Goldsborough in the District Court of the United States for the District of Columbia on petition of Attorney General Tom Clark. The order follows:

This action came on to be heard on the verified complaint of the United States of America and the affidavits of J. M. Donaldson, postmaster general of the United States; J. M. Johnson, director of the Office of Defense Transportation; and Robert F. Cole, executive secretary of the National Mediation Board, and upon the plaintiff's application for a temporary restraining order against the defendants and each of them; and it appearing to the court that there is now threatened by the defendants herein, Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen and Enginemen and Switchmen's Union of North America, a strike in the transportation by railroad system of the United States; and that such a strike, if permitted to occur, will deprive the country of essential transportation service, will greatly obstruct the flow of interstate commerce and the transmission of the mails of the United States over the affected railway system, will imperil the national health and safety, will interfere with and obstruct the effective performance and discharge of vital and necessary governmental functions and will frustrate the powers conferred by the Constitution and by act of Congress upon the executive branch of the government, and will cause the United States of America to suffer irreparable injury for which it has no adequate remedy at law.

NOW, THEREFORE, IT IS BY THE COURT this 10th day of May, 1948,

ORDERED that the defendants, and each of them, and their officers, agents, servants and employees, and all persons in active concert or participation with them be and they are hereby restrained pending further order of this court from in any manner encouraging, ordering, engaging in, or taking any part in a threatened strike in the transportation by railroad system of the United States, or from in any manner interfering with or affecting the orderly continuance of work in the said railway system, and from taking any action which would interfere with this court's jurisdiction in the premises;

AND IT IS FURTHER ORDERED that the defendants, and each of them, and their officers, agents, employees, and all persons in active concert or participation with them, be and they are hereby restrained pending further order of this court from in any manner permitting or allowing to remain outstanding the notice and statement issued on or about April 29, 1948, by D. B. Robertson, president, Brotherhood of Locomotive Firemen and Enginemen; A. Johnston, grand chief engineer, Brotherhood of Locomotive Engineers, and A. J. Glover, president, Switchmen's Union of North America, which notice or statement in effect called a strike of the said defendant unions in the transportation by railroad system of the United States and the said defendants are further ordered and directed to withdraw forthwith the said notice and statement herein described.

AND IT IS FURTHER ORDERED that this restraining order shall expire at 7:45 o'clock p.m. on May 19, 1948, unless before such time the order for good cause shown is extended, or unless the defendants consent that it may be extended for a longer period;

AND IT IS FURTHER ORDERED that plaintiff's motion for preliminary injunction be set down for hearing on May 19, 1948, at 10:00 o'clock a.m.

THREE CHIEFS' MORNING-AFTER STATEMENT

A. Johnston, grand chief engineer, B. of L.E.; D.B. Robertson, president, B. of L.F.&E., and A. J. Glover, president, Switchmen's Union of North America, issued the following statement on May 11: "Our wage and rules dispute with railroad management still is in front of us. We have complied with the restraining order of the court and we have been compelled to work, but we have not retreated from our previous position that our wages must be increased and our working conditions improved as requested.

"Good labor relations cannot be created by injunction. Legal skirmishing is not a substitute for honest and sincere collective bargaining.

"We have been confronted by legal talent in massed formation since the early stages of this wage-rules movement. It got so bad we had to call in an attorney to keep us advised about what the phalanx of company lawyers were trying to say. In our opinion, it is about time the companies were advised of the situation they are creating. There are no lawyers operating trains. That work is done by men who sweat and bend their backs. And those working men demand payment that preserves their earning power and working rules expressed in language they can understand.

"Emergency board recommendations which spring from abstract economic formulas and are written in quasi-judicial phraseology will not appease men who know what the facts are and demand that the facts of their case be considered.

"Our men cannot understand why an emergency board is able to disregard those parts of the evidence concerning the cost of living which fail to fit into the pattern of a company pre-determined wage offer.

"Our members know that the board was told that the workers concerned had received no wage adjustment since June, 1946. The board was shown that the cost of living had climbed 22.9 per cent from June, 1946, to September, 1947. Prices have continued to climb since that date. The railroads admitted before the board that the offered 15½ cents amounted only to an 11 per cent increase. To meet the increased cost of living from June, 1946, to September, 1947, our men would have had to receive 29.3 cents per hour. An additional 3 cents would be required to bring the adjustment up to the cost of living index for March, 1948.

"In the face of such information, the board blandly recommended that any cost of living facts not embraced in the 15½ cents wage formula of 1947 could not be taken into consideration by the board.

"Such a figure may have been fair to unions which accepted that amount in 1947. But this is 1948 and the cost of living has been tied to a balloon since the time when a pattern-minded group of men cut out the wage styles for last year.

"We are American working men and we cannot develop an appetite for regimentation. We are demanding that the same freedom that was granted to prices be given to wages. If we fail to insist upon that freedom at this time we will be placing ourselves in the position of tacitly endorsing wage slavery. We are forced to insist that wages be permitted to follow the rising prices and that our real earnings be restored to their position of June, 1946, instead of being slashed by 15 per cent as they would be by the unrealistic and near-sighted recommendations made in this case. If wages are not freed from control in fact as well as in name, then price controls must be restored.

"We most earnestly hope that the government will be able to explain its policy in handling this dispute. We have worked and we have bargained patiently under the provisions of the Railway Labor Act. Months have straggled past while we brought every argument and every evidence to bear in this dispute. We are not acting in haste. The decision to strike was made with great regret.

"The Railway Labor Act under which our members work and under which railroads operate, has been described as a model labor relations law. It provides machinery to assist in the settlement of disputes. It provides for a fact-finding process. It provides for ample 'cooling off' periods. We have followed every provision of that law.

"Acceptance of any recommendations made under the Railway Labor Act is voluntary. Either management or unions may reject the findings. We are forced to reject them because of their failure to consider all the facts.

"Since coming to Washington, we have found the government apparently assuming the position that the recommendations made under the Railway Labor Act are final and binding. Is it the intention of the government to transform the voluntary procedures of the act into compulsory arbitration? Now that the government is operating the railroads that question must be answered and it should be answered speedily.

"If that sort of compulsion is the policy of government then labor can look forward to regimentation while management continues to pyramid its profits.

"If compulsion is the policy then we can appreciate why we have been denied a proper change in our working conditions which have not been uniformly improved for more than 25 years—and why it is recommended that many favorable conditions be taken from us.

"During the 25 years since we have obtained appropriate rules improvements, we have seen overtime pay rates for work on Sundays and holidays become almost universal in industry. The night shift differential is generally accepted. But despite the advancements established in industry, it is recommended that we abandon all hope for the same benefits.

"We ask for a correction of a prevailing condition in which men are subject to unwarranted calling at initial terminals many hours before they are required to leave with their trains, for which they receive no compensation. Other rules designed to protect the rights of our men in the involved operations of the railroads also were requested.

"The fact remains that our working rules and our wages must be improved in keeping with conditions as they are in 1948 and it is equally certain that excursions into government seizure and the courts are not a solution."

---

operations. He also said that railroad finances will be handled exactly as they are under normal conditions.

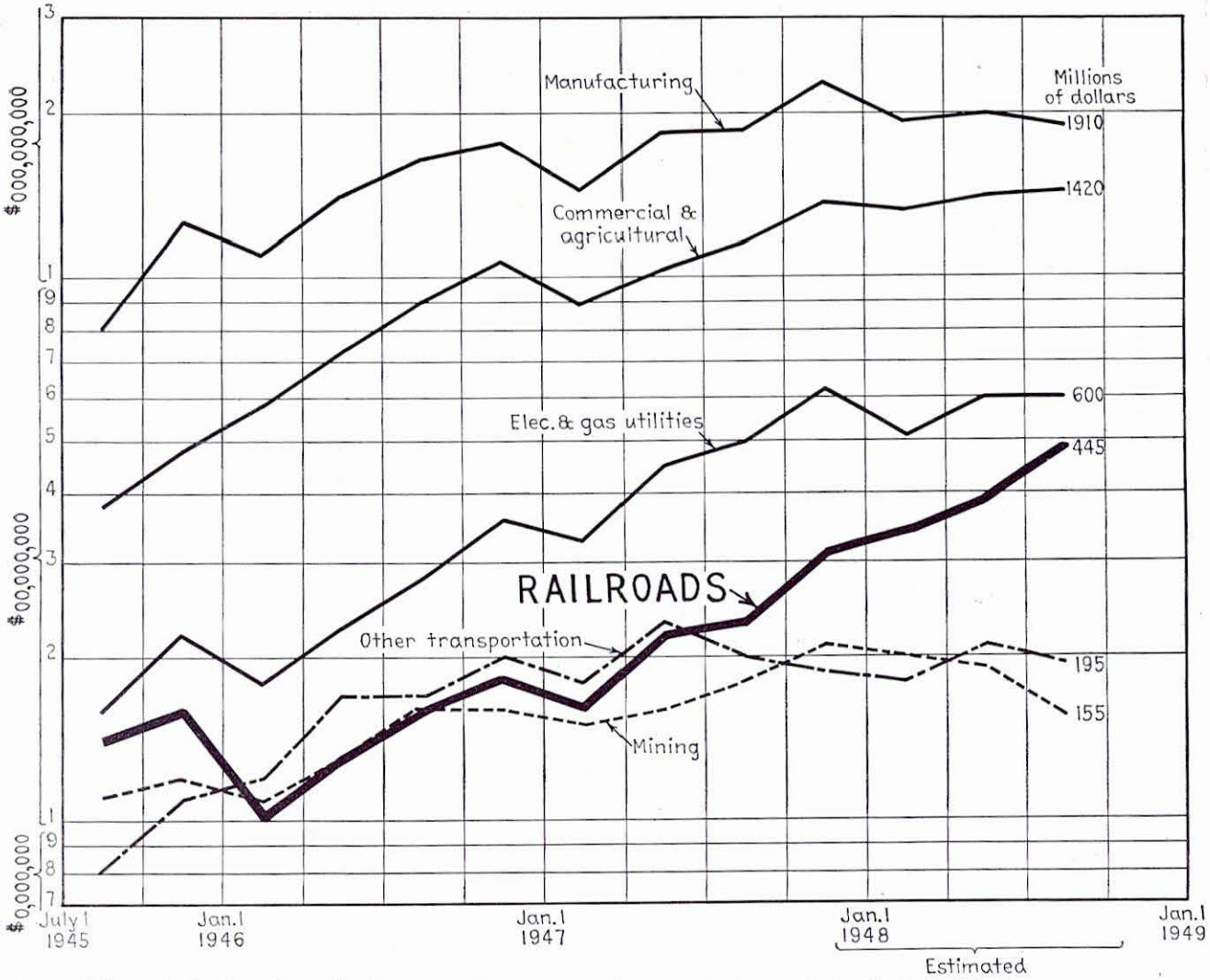
President Truman's press secretary, Charles G. Ross, said on May 11 that the union leaders advised Dr. Steelman of their decision to call off the strike as soon as that decision was made; and Dr. Steelman conveyed the information to the President. The wage and rules dispute was now out of the White House in the sense that Dr. Steelman would not take the initiative of calling further conferences, Mr. Ross also said. He added, however, that Dr. Steelman would be available if either side wishes his assistance.

Mr. Ross presumed that negotiations would continue between the carriers and union representatives. He went on to say that a settlement will be reached in order to permit the return of the carriers to private management. In this connection, Mr. Johnston said at a May 11 press conference that he expected further negotiations to be with Secretary Royall because railway management is "out the window." The secretary was scheduled to confer with the union leaders on operational problems on the afternoon of the eleventh, but he had said at his press conference on the forenoon of that day that he had no plans to enter wage and rules negotiation. He added that the unions and carrier managements were free to continue negotiations.

In order to avoid loss from spoilage or delays en route to perishables and livestock, embargoes on shipments of these commodities were placed last

(Continued on page 204)

RAILROADS SURPASSING ALL OTHER HEAVY INDUSTRY IN GROWTH OF CAPITAL EXPENDITURES



Source: Table on Capital Expenditures, by Quarters, in the Department of Commerce's "Current Business", April, 1948, issue

The railroads are headed toward 1948 expenditures totaling more than $1.6 billion—which would exceed those of 1947 by 75 per cent and would surpass the all-time record (1923, with expenditures of $1,059 million) by more than 50 per cent.

The above chart shows quarterly expenditures beginning with the second half of 1945 through 1948 (the 1948 figures, of course, being estimated). The data are plotted on a semi-logarithmic scale, which brings out changes in rate of expansion. The figures on which the chart was based are taken from the April, 1948, issue of the "Survey of Current Business," published by the Department of Commerce. Taking the first quarter after the war as a base (i.e., the last quarter of 1945), only commercial and agricultural expenditures have shown a greater rate of increase than those of the railroads.

The figures have been collected by the Office of Business Economics of the Department of Commerce and the Securities and Exchange Commission. Annual figures for capital expenditures by the various categories since 1945 were as shown in the accompanying table.

The survey notes a tendency on the part of capital expenditures in most of the groups to decline or level off during the second half of 1948, but it adds—

"In striking contrast to the trends indicated for other business groups, the railroads expect their outlays for new rolling stock and other capital improvements to rise by at least 75 percent in 1948 over 1947. If these expenditures eventuate, the 1948 total will be about $1.6 billion and the annual rate of the railroads' outlays in the second half of 1948 should approximate $1.8 billion. Last year the railroads' realized outlays were about half that figure."

Expenditures on New Plant and Equipment by United States Business, 1945-48[1]
(Millions of dollars)

Industry Group	1945	1946	1947	1948[2]
Manufacturing	3,210	5,910	7,460	7,760
Mining	440	560	690	690
Railroad	550	570	920	1,620
Other Transportation	320	660	800	780
Electric and gas utilities	630	1,040	1,900	2,300
Commercial and miscellaneous[3]	1,480	3,300	4,430	5,550
Total	6,630	12,040	16,200	18,700

[1] Excluding agriculture.
[2] Estimates based on anticipated capital expenditures of business.
[3] Includes trade, service, finance, and communication.
Note: Figures are rounded and will not necessarily add to totals.

PULLMAN INCORPORATED

A REPORT TO THE RAILROAD USERS AND BUYERS OF PULLMAN PRODUCTS

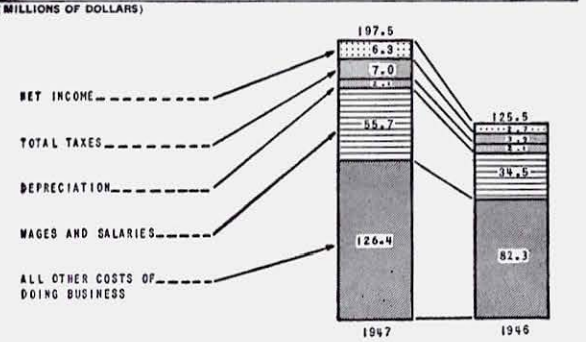
(Condensed from Annual Report for 1947 to Stockholders)

The highest peacetime sales of products and services ever achieved by the companies constituting the present Pullman group of companies marked the year 1947 as a year of high production and activity, despite serious obstacles to maximum possible output posed by shortages of material and of certain types of skilled labor and by important changes in design. Highlights of the financial and statistical record appear in a table and accompanying graph set forth herein.

MANUFACTURING OPERATIONS

Postwar transition difficulties in the form of critical shortages of vital materials and skilled labor, which continued to plague industry in general throughout the year 1947, operated to restrict production in the carbuilding subsidiary during that year.

APPLICATION OF GROSS REVENUES FROM SALES OF PRODUCTS AND SERVICES
(MILLIONS OF DOLLARS)



Notwithstanding those difficulties, Pullman-Standard Car Manufacturing Company's shipment of 16,441 freight cars for domestic use exceeded annual shipments in any year since 1930, with one exception, and nearly doubled the 1946 output of 8,382 cars. The Company also turned out 337 domestic passenger train cars and 509 municipal transit vehicles, as well as 6,640 freight cars for foreign service.

Deliveries of new railway passenger cars continued to be restricted by combination of factors, including shortages of materials and the multiplicity of postwar car designs. The latter involves some 200 different floor plans required for 2,000 cars ordered since the end of the war. These orders therefore averaged about 10 cars for each separate basic design.

Pullman-Standard's production continued to be depressed below a normal volume, particularly in the passenger car shops after the practically complete suspension of passenger car building during most of the war period, and by the difficulties met in procuring replacements of certain categories of skilled labor.

RESEARCH AND NEW DEVELOPMENTS

Substantial expenditures have been made on the research programs of the two major subsidiaries in recognition of the importance of fundamental research to the future of an organization in branches of industry characterized by rapid technological and engineering advances.

In the railway equipment field, Pullman-Standard Car Manufacturing Company's product improvement activities have the three-fold purpose of (1) developing new products and advanced designs for railway passenger and freight cars and traction vehicles; (2) improvement of existing designs and products and (3) development of new and improved production techniques.

A development of significant importance in 1947 was Pullman-Standard's introduction of its new P-S-1 standard box car, several thousand of which have already been delivered to the Railroads. The new car is largely a welded unit (see color insert) with numerous component parts formerly purchased from other manufacturers, now being engineered and built by the company.

In 1947 Pullman-Standard delivered 32 of the Company's new Power Ballasters, which are unique machines for uniformly tamping ballast under Railroad track ties, thereby contributing to the speed and efficiency of Railroad maintenance of way operations.

FINANCIAL REVIEW

Payment of dividends at the rate of $3.00 per share,

(Advertisement)

for the sixth consecutive year, involving disbursement of $8,583,409 during the year 1947, absorbed all of the earnings for the year and necessitated draft of $2,253,840 on Surplus. Pullman Incorporated and its predecessor companies, Pullman's Palace Car Company and The Pullman Company, have paid dividends each year without interruption beginning with the year 1867 to date, a period of 81 years.

Consolidated Working Capital (excess of current assets over current liabilities) as of December 31, 1947, stood at $129,003,933 (equivalent to $48.53 per share of capital stock). Cash and U. S. Government Securities in the Working Capital held by the Corporation and its subsidiaries on that date totaled $36,600,936, equivalent to $13.77 per share. It is expected that with increased volume of production in process, there will be increased employment of cash in financing the resulting load of inventories and receivables. The present holding of cash and Government securities would appear to be ample for that purpose.

The stated value of $40.00 per share for Pullman Incorporated capital stock plus the per-share allocation of Consolidated Surplus of Pullman Incorporated and its subsidiaries, yields a year-end book Net Worth, as customarily figured, of $50.48 per share of Pullman Incorporated stock. However, this computation does not include the Deferred Credit of $7.74 per share derived from the sale of The Pullman Company stock, subject to possible adjustments; nor does this computation of Net Worth include any part of the Reserve appropriations carried on the Consolidated Balance Sheet.

The total Federal, State and local taxes of $7,005,102 paid or accrued by the Pullman group of companies in 1947 absorbed nearly 53 per cent of pre-tax Net Income and were equivalent to $2.64 per share of capital stock.

The Consolidated Balance Sheet for the 1947 year-end shows a record high inventory of $92,395,418, carried at cost. This discloses the extent to which cash working capital has been absorbed by large accumulations of high-cost materials and of work in process. Of the total Inventories, Pullman-Standard accounted for $82,207,292 or 89 per cent, which is largely hedged by firm orders for railway freight and passenger cars that will be shipped out in 1948 and 1949 as finished product. All inventories have been adjusted to accord with the usual physical checking during the year.

FINANCIAL AND STATISTICAL HIGHLIGHTS

	1947	1946
GROSS REVENUES FROM SALES OF PRODUCTS AND SERVICES	$197,536,163	$125,502,477
APPLICATION OF PROCEEDS:		
Costs of Doing Business (Except those listed below)	126,400,133	82,278,507
To Employes for Salaries and Wages	55,679,174	34,506,736
Provision for Depreciation	2,122,185	2,063,260
To Government (Fed., State and Local) for Taxes	7,005,102	3,967,055
Net Income to Surplus	6,329,569	2,686,919
Per Share	$2.38	$0.83
Per Dollar of Sales of Products and Services	3.2¢	2.1¢
DIVIDENDS PAID TO STOCKHOLDERS	$ 8,583,409	$ 9,689,691
Per Share	$3.00	$3.00
BOOK NET WORTH—Total	$134,188,540	$170,600,317
Per Share	$50.48*	$52.83#
WORKING CAPITAL—Total	$129,003,933	$135,404,675
Per Share	$48.53	$41.92#
BACKLOG OF UNFILLED ORDERS AT DECEMBER 31	$357,647,181	$331,911,005
NUMBER OF STOCKHOLDERS	32,962	35,735

* Does not include $20,569,335 ($7.74 per share) of Deferred Credit derived from sale of The Pullman Company stock nor any part of the Reserves carried on the Consolidated Balance Sheet

\# Revised to reflect the de-consolidation of The Pullman Company figures

FURTHER INTERIM REPORT ON PULLMAN SEPARATION PROCEDURES

Final settlement of many of the contingencies in connection with the sale of The Pullman Company and the determination of asset and liability position under the provisions of the Closing and Escrow Agreements will necessarily be a complicated and long-drawn-out process, probably not completed, especially with respect to tax liability contingencies, for several years. The earlier interim report made to Stockholders on these matters, in the 1947 Second Quarter Statement, is still as adequate a report as can be made of the December 31, 1947 year-end.

No settlements of importance have been made in connection with the numerous claims and counterclaims and possible contingencies of liability arising out of the operation of the sleeping car business during Pullman Incorporated's ownership of The Pullman Company prior to 1946, and no charges have been made against the Balance Sheet deferred credit item of $20,569,335.

OUTLOOK FOR 1948

At the time this report was completed, the results of operation for the first quarter of 1948 were not available, hence comparison with the 1947 first-quarter results is not possible. The trend of billings, however, indicates that there will be an increase in that respect for the first quarter of 1948 as compared with billings in the corresponding period of 1947.

As of March 1, 1948 unfilled-order backlogs in the Pullman-Standard and Kellogg Company groups of subsidiaries amounted to a total of $366,000,000. However, the rate or trend of earnings in 1948 in both major-subsidiary groups will depend in large measure upon the procurement of sufficient material and labor, with improved labor efficiency and satisfactory labor relations, to support a fair over-all volume of production.

Respectively submitted on behalf of the Board of Directors.

DAVID R. CRAWFORD,
President

April 9, 1948

(Advertisement)

QUOTING MR. ROBERTSON

On May 25, 1946, a railway union chief—A. F. Whitney, leader of that year's unsuccessful strike—confessed that he had lost that strike, after having attempted to defy an aroused public opinion behind the government of the United States. Commenting at that time, David B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen and leader of the hold-out ops in 1948, had this to say:

"That was not an unexpected confession, for any one possessed of an elementary knowledge of labor relations, which apparently Mr. Whitney does not have, would have known that a strike against the government was foredoomed to failure. . . .Regardless of law he plunged ahead like a bull in a china shop, followed meekly by 'Me-too Johnston.'

"The sad and regrettable thing is not that Mr. Whitney has lost his cause, but that he has seriously prejudiced the cause of organized labor in general, and railway labor in particular. He did it in the face of certain defeat and for personal greed and vanity. The interests of engineers and trainmen, as well as those of other workers, were completely lost sight of in an attempt to bolster his already sagging reputation."

(Continued from page 200)

week by many railroads and by the Railway Express Agency, generally effective May 7, 8 or 9.

To avoid having long-run passenger trains tied up at intermediate terminals if the strike were effective, thus inconveniencing passengers, some railroads annulled trains scheduled to leave terminals on May 10 when their arrival times were after 6 a.m. on May 11. Among roads taking this precautionary step was the New York Central, which had cancelled the "Twentieth Century," "Commodore Vanderbilt," and other Chicago-New York trains leaving on May 10. Several other through trains of this road leaving New York, Boston, Mass., St. Louis, Mo., and other major terminals either were scheduled for annulment or consolidation with other trains or to make only portions of their regular runs, but these instructions were countermanded after the seizure order became effective and most trains departed on time.

While some railroads indicated their intention in the event of a strike to operate as many trains as possible with supervisory employees manning the locomotives, others—including the Pennsylvania, Southern, Baltimore & Ohio, New York, New Haven & Hartford, Seaboard Air Line, Atlantic Coast Line, Delaware, Lackawanna & Western and the Erie, among others—warned travelers and shippers and employees that in the interest of safety, no trains would run.

On May 10, after announcement of the federal seizure order, the Central of New Jersey, the New York Central, the Long Island and the New Haven were among roads that announced they had re-installed all trains previously ordered cancelled and were planning normal operations on May 11. The N. Y. C. rescinded its embargo order on shipments of livestock, live poultry and perishables which had been scheduled to go into effect at midnight on May 10.

SEVEN COLONELS SELECTED

Secretary of the Army Royall has established an organization to run the railroads for the period of federal control. He divided the carriers into seven regions and gave commissions as colonels to seven railroad executives who will function as regional directors under Major General Leavey. They are:

Gustav Metzman, president, New York Central, Eastern region

Roy B. White, president, Baltimore & Ohio, Allegheny region

R. H. Smith, president, Norfolk & Western, Pocohontas region

Ernest E. Norris, president, Southern, Southeastern region

Ralph Budd, president, Burlington Lines, Central Western region

Charles E. Denny, president, Northern Pacific, Northwestern region

J. D. Farrington, president, Rock Island, Southwestern region

Brigadier General Andrew F. McIntyre, retired, general manager of the New York region of the Pennsylvania, has been appointed assistant to General Leavey.

C. & O.—P. M. Merger Sent Back to I. C. C.

Court holds commission must pass on dissenting-stockholder claims

The Supreme Court of the United States has sent the Chesapeake & Ohio-Pere Marquette merger proceedings back to the Interstate Commerce Commission for additional findings which will pass upon the claims of dissenting P. M. preferred stockholders. The court's opinion does not require the commission to accord the dissenters more favorable treatment than the assenting P. M. preferred stockholders received under the plan; it holds in effect that commission approval of a merger as "just and reasonable" and "consistent with the public interest" is inconsistent if there are left untied any loose ends in the nature of potential capital liabilities against the merged property.

The Commission's Duty—"We think," the court said, "that the commission must pass upon and approve all capital liabilities which the merged company will assume or discharge as a result of the merger. If some greater amount than that specified in the [merger] agreement is to be allowed to any class of stockholders, it must either deplete the cash or inflate the liabilities or capital issues of the new company. It may be that in this case the merged company will be strong enough to carry this burden and still perform its public service. But that is not the sole purpose of the supervision provided by statute. It is also in the public interest that no capitalization or indebtedness be carried over except that which meets the test of the act in all other respects."

Noting the overriding character of federal law, the court held further that, in passing upon the claims of the dissenting stockholders, the commission must look for standards "only in the Interstate Commerce Act," and not to what the legal rights of those stockholders were under the P. M.'s Michigan charter and the laws of that state. The dissenters had sought a commission determination of their claim on the latter basis.

The court's decision was embodied in a 5-to-3 opinion, announced on May 3 by Justice Jackson. Justice Frankfurter filed a dissenting opinion in which Chief Justice Vinson and Justice Burton joined. Justice Reed did not participate in the consideration or decision of the case. The I.C.C. report approving the merger, which became effective June 6, 1947, was noted in *Railway Age* of April 5, 1947, page 704.

The dissenting stockholders comprised a group headed by Albert E. Schwabacher, their holdings being 2,100 shares of $100 par, 5 per cent, cumulative preferred stock of the P. M. This, the court's decision said, was "a little less than 2 per cent of the outstanding stock of this class." Dividends have been unpaid since 1931 and, as of the commencement of the controversy, were in arrears $72.50 per share.

Basis of Claims—The P. M. charter provided for full payment of the stock at par, plus accrued unpaid dividends, "in the event of dissolution, liquidation, or winding up of the company, voluntary or involuntary . . . before any amounts are paid to holders of the . . . common stock." The dissenters contended that the merger amounted to a "winding up" of the P. M. under the

News Department continued on next left-hand page

PROBABLY no railroad man need be told that every carload of C & O's record-breaking tonnage moved behind steam.

Nor will it surprise many that almost every ton made most of its miles behind Lima-built locomotives.

The significant point is this: Here is an example of what *modern* steam power can do. It is a special example, to be sure, but a concrete one. Those are real locomotives, making real miles, moving real tonnage—and lots of it. Almost to an engine, they are modern—modern from the rims up, from the pilots back.

Could any other type of power—including older steam locomotives—have equalled C & O's cost per ton-mile?

We doubt it. That's why we say there *is* a place for steam—and in this place, the modern steam locomotive can do, and is doing, an outstanding job.

It's worth thinking about.

C. & O. Sets All-Time Record, Ships 90 Million Tons of Coal

BY ROBERT J. BOWMAN

President, Chesapeake & Ohio Railway

Experiencing the greatest year of its history in 1947, the Chesapeake and Ohio Railway Co. anticipates an even larger volume of busi

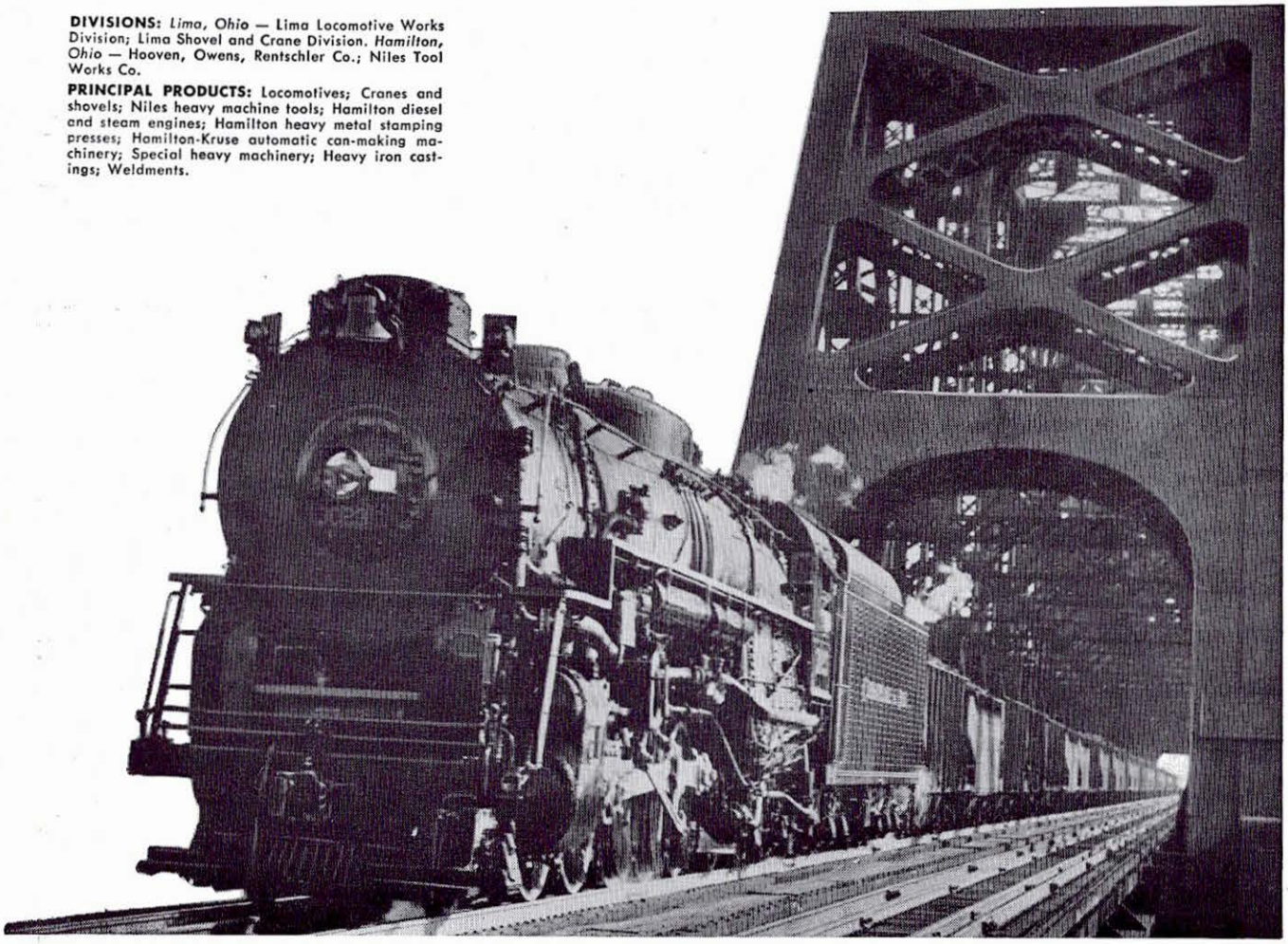
record will be bettered with the completion. In the coming year, of two branch lines which will open up new coal areas. Man new mines, along with widespread mechanization of existing mines, should increase materially the coal tonnage

this is steam at work

LIMA HAMILTON CORPORATION

DIVISIONS: *Lima, Ohio* — Lima Locomotive Works Division; Lima Shovel and Crane Division. *Hamilton, Ohio* — Hooven, Owens, Rentschler Co.; Niles Tool Works Co.

PRINCIPAL PRODUCTS: Locomotives; Cranes and shovels; Niles heavy machine tools; Hamilton diesel and steam engines; Hamilton heavy metal stamping presses; Hamilton-Kruse automatic can-making machinery; Special heavy machinery; Heavy iron castings; Weldments.



charter clause as construed by Michigan law. Noting that the merger agreement made provisions for some compensation to common stockholders, they proceeded to insist that their preferred shares be recognized in the plan on the basis of at least $172.50 each.

In approving that phase of the merger plan which involved the exchange of this P. M. preferred by assenting holders, the commission found that the market value per share of that stock had ranged, at different times, from $87 to $99. It found further that the merger terms gave stocks in exchange which would have realized about $90 and $111 per share on the same dates. It then went on to disclaim jurisdiction to pass upon the further claims which the dissenting stockholders asserted on the basis of their interpretation of Michigan law This disclaimer, however, "does not mean that the Chesapeake & Ohio and the Pere Marquette do not remain free to settle controversies with dissenting stockholders through negotiation and litigation in the courts," the commission said. It proceeded to express its view that the maximum possible cost of settling such controversies would impose no financial burden or excessive expenditure on the merged company.

"The commission," as the court put it, "thus left in a state of suspense, subject to further litigation, these claims concerning the extent of the capital obligations of a constituent company, after examining them sufficiently to determine only that, however settled, they did not involve enough to affect the solvency of the new company or jeopardize its operations."

After the dissenting stockholders' petition for rehearing was denied by the commission, they filed suit in the United States District Court for the Eastern District of Virginia. There a three-judge court sustained the commission, and the dissenting stockholders' appeal from that determination brought the case to the Supreme Court. As summarized in the latter's opinion, the appellants' contention was "that their share in the merged company is to be measured by, or their remedies as dissenters, are to be found in, state law, but that the fedral agency is bound to determine and apply that law." That is the contention rejected by the court on the basis of its findings as to the Interstate Commerce Act's overriding application to merger cases.

Federal Law Overrides — "Whatever rights the appellants ask the commission to assert must be founded on federal, not on state, law," the court said. "Apart from meeting the test of public interest, the merger terms, as to stockholders, must be found to be just and reasonable. These terms would be largely meaningless to the stockholders if their interests were ultimately to be settled by reference to provisions of corporate charters and of state laws. Such charters and laws usually have been drawn on assumptions that time and experience have unsettled. Public regulation is not obliged and we cannot lightly assume it is intended to restore values, even if promised by charter terms, if they have already been lost through the operation of economic forces. . . . In appraising a stockholder's position in a merger as to justice and reasonableness, it is not the promise that a charter made to him but the current worth of that promise that governs, it is not what he once put into a constituent company but what value he is contributing to the merger that is to be made good. . . .

"Congress has made no provision by which minority stockholders, dissatisfied with a proposed railroad merger, may block it or compel retirement of their capital, as statutes often permit to be done in the case of private corporations where the public interest is not much concerned with its effect on the enterprise. And since Congress dealt with the subject of stockholders' consent, its failure to provide for withdrawal of non-consenting capital cannot be considered an oversight to be supplied by us. A part of the capital dedicated to a railroad enterprise cannot withdraw itself without authorization any more than all of the capital can withdraw itself and abandon the railroad without approval. It must submit to regulations and to readjustments in the public interest on just and reasonable terms."

As to the further consideration which the commission is required to give the dissenters, their alleged rights under the Michigan law are to be considered "to the extent that they may affect intrinsic or market values," the court said. It added: "While the commission has found that what the appellants are given in this plan is just and reasonable, the record indicates that it may have declined to consider these claims, even if they are found to have some effect on the intrinsic value of the stock, because it thought it lacked jurisdiction. Under these circumstances, we cannot be sure that in arriving at its conclusion that the plan was just and reasonable it did not exclude some factors that it should consider under the views set out in this opinion."

Dissenters Uphold I.C.C.—Justice Frankfurter's dissent expressed the opinion that the commission was right in the view it took of its powers and duties. The dissenting justice conceded that reorganization plans of bankrupt roads must embody determinations of all claims, but insisted that "a reasonable amount of contingent obligations may easily be allowed for" in voluntary merger proceedings. Justice Frankfurter also pointed out that the I. C. act's merger provisions (section 5) make the necessary proportion of assenting stockholders dependent on state law, and contain an expressed disclaimer of authorization of federal incorporation. The latter, he added, "surely implied a desire to retain to the fullest possible extent the ties between the states and their chartered corporations."

"The court," the dissent concluded, "is holding, in essence, that while state law governs the rights of railroad stockholders before and after voluntary merger proceedings it is supplanted during such proceedings. In thus thrusting upon the commission a jurisdiction which it itself has rejected, the court is depriving the states of a measure of control over their own corporations when this is not required by a fair reading of the Transportation Act, and although the survival of such state law does not interfere with the national interest as found by the agency selected by Congress for determining that interest."

Money for Retirement And Mediation Boards

Congress has made no reduction in appropriations proposed in President Truman's budget message for operations of the Railroad Retirement and National Mediation boards during the fiscal year ending June 30, 1949. These appropriations completed their running of the congressional gauntlet when the Senate recently passed the House-approved Labor-Federal Security appropriations bill carrying $642,416,000 for the Retirement Board and $862,550 for the Mediation Board.

The former figure includes $637,986,000 to be appropriated to the Railroad Retirement Account in the Treasury and $4,530,000 for R.R.B. administrative expenses under the Railroad Retirement Act. Funds for the National Railroad Adjustment Board are included in the N.M.B. appropriation (see *Railway Age* of March 20, page 99). Since some of the bill's other provisions were different in the Senate and House versions, the measure went to a Senate-House conference committee.

Also, in conference is a deficiency appropriation bill (H.R.6055) which carries in its Senate version an additional N.M.B. appropriation of $48,800 for the current fiscal year ending June 30, 1948. The money would be for arbitration and emergency boards, for which N.M.B. has already received $119,000 during the current fiscal year. The board's chairman, Frank P. Douglass, told a Senate appropriations subcommittee, at recent hearings, that the $119,000 has been "exhausted" and the situation as to the demand for emergency boards is "still tight."

Say Truckers and Forwarders Make Unlawful C. & D. Payments

Examiner Frank E. Mullen has recommended in a proposed report that the Interstate Commerce Commission find that motor carriers and freight forwarders are making unlawful payments for pick-up and delivery services performed by warehousemen, pool car distributors, or other cartage operators, at Kansas City, Mo., the Twin Cities, Minn., Seattle, Wash., and Portland, Ore. The payments which the examiner would condemn are higher than pub-

News Department continued on next left-hand page

A LOCOMOTIVE MODERNIZED WITH THE FRANKLIN SYSTEM OF STEAM DISTRIBUTION

handles . . .

more freight

. . . faster with less fuel and lower maintenance

There are no other changes or combinations of changes which you can make in existing steam motive power that will produce such fundamental improvements in locomotive performance as equipping the engine with the Franklin System of Steam Distribution, using poppet valves. Without increasing fuel consumption or boiler capacity, you can increase horsepower at normal operating speeds by 19% to 30%. When this greater power is not being utilized, you will normally achieve average fuel savings ranging from 15% to 25%, depending on operating conditions.

We would like to give you figures to show what can be expected in the way of improvements from your own locomotives.

On February 4th, Sante Fe's 4-8-4 type locomotive, No. 3752, re-entered service—modernized and equipped with the Franklin System of Steam Distribution, Type B. It went into regular freight service immediately and has continued in this service without interruption. It has proved its ability to handle heavier loads and has made some remarkable cuts in running time of heavy freights. While figures are not yet available it is evident that fuel and water consumption are substantially reduced. To date valve-gear maintenance has been practically nil and there is every indication that — with poppet valves, with the simplicity of the rotary valve-gear that has all driving parts located on the outside, and with improved drifting — machinery maintenance will be reduced and locomotive availability greatly increased.

FRANKLIN RAILWAY SUPPLY COMPANY

NEW YORK • CHICAGO • MONTREAL

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER • POWER REVERSE GEARS
AUTOMATIC FIRE DOORS • DRIVING BOX LUBRICATORS • STEAM GRATE SHAKERS • FLEXIBLE JOINTS • CAR CONNECTION

lished allowances paid to shippers for performing their own pick-up and delivery services, another recommended finding of the report being that such higher payments become lawful only when they are made pursuant to written contracts under which the draymen are agents of the carriers.

Railroad pick-up and delivery arrangements at the cities involved were found to be on that contractual basis, and thus lawful. Most of the motor carrier and forwarder arrangements were found to be without written contracts; and the examiner would have the commission conclude that, under such circumstances, the payments must not exceed the published shipper allowance—because "the consignors or consignees of the goods have made their own arrangements for the service within the meaning of the tariffs." The proposed report embraces four investigations (the title case being No. 29762) instituted by the commission last year (see *Railway Age* of June 14, 1947, page 1231).

Five Government Reparation Cases Set for Hearing September 22

Hearing before Division 4 of the Interstate Commerce Commission on five of the numerous complaint proceedings wherein the federal government is seeking recovery of alleged overcharges made by the railroads on the wartime shipments of various commodities has been rescheduled for September 22 at the commission's Washington, D. C., offices. The proceedings are docketed as Nos. 29622, 29735, 29746, 29795 and 29805. The hearing, originally scheduled for January 20, subsequently was set back to April 26 and later to "a date to be fixed." The postponements were granted by the commission at the request of the Department of Justice.

Reports Bill to Ease Conditions For Sale of Federal Barge Lines

The House committee on interstate and foreign commerce has reported favorably to the House an amended version of H.R.5318, the bill to make less restrictive the conditions under which transportation facilities of the Federal Barge Lines, operated by the government-owned Inland Waterways Corporation, may be sold to private interests. The bill is sponsored by the committee's chairman, Representative Wolverton, Republican of New Jersey. The committee's report said that the amended version would furnish the "necessary authorization" to the Secretary of Commerce for "proper disposal" of I.W.C. assets and at the same time "assure the continuation of essential services along the Mississippi waterways system."

The principal change from the original version, which was outlined in *Railway Age* of February 14, page 69, rewrites the provision requiring any purchaser to promise continued operations on the Mississippi and extends that requirement to make it exact also an agreement "to continue the pioneering of barge transportation on the Missouri river to Kansas City, Mo., to Omaha, Nebr., and Sioux City, Iowa, for a period of at least five years." As to continued operations on the Mississippi, the provision would forbid a sale to any purchaser "who shall not agree, as part of the consideration for the acquisition thereof (A) that it will continue such facilities in adequate common carrier service in a manner substantially similar to the service rendered by the corporation, with due regard to the transportation needs of the areas served, (B) that a specific and mandatory number of trips per year will be made in the interests of small business in a service similar to that being rendered by the corporation in acceptance of less than barge-load quantities."

There is a proviso stipulating that this continued-operation requirement shall not apply to a purchaser of I.W.C. facilities and rights on the Warrior river. The original version's prohibition against sale to a railroad or railroad affiliate remains unchanged, that restriction not applying to the Warrior river facilities either.

Other committee amendments rewrite the provisions designed to insure that the Interstate Commerce Commission will transfer all I.W.C. certificates to the purchaser, and that the latter will also succeed to all joint-rate and through-route arrangements. The I.C.C. has "no objection" to enactment of the bill, according to a letter which Chairman Wolverton received from Commissioner Splawn, chairman of the commission's legislative committee. Meanwhile, however, Commissioner Splawn also advised that the commission was expressing "no opinion on the question of whether the present is an opportune time for the government to sell these lines, and if so, whether the existing statute is inadequate for that purpose and should be replaced by a new act such as here proposed."

The existing statute referred to by Commissioner Splawn is the Inland Waterways Corporation Act which requires that I.W.C. be carried on as a government operation until: (1) There shall have been completed navigable channels on the Mississippi river system as authorized by Congress; (2) terminal facilities shall have been provided on such waterways adequate for joint rail and water service; (3) joint rail-barge rates shall have become generally available; and (4) private operators engage in, or shall be ready to engage in, common carrier operations on such waterways.

C. & N.W., N.Y.C. Fined

The Interstate Commerce Commission has been advised that judgment in the amount of $5,000 and costs was entered against the Chicago & North Western in the federal district court at Sioux City, Ia., on May 4. According to the commission's notice, the carrier neglected to obey a commission order of May 4, 1942, in the Docket No. 28216 proceeding, in that it paid pick-up allowances at Maquoketa, Ia., on livestock during a period when it did not actually offer the pick-up service.

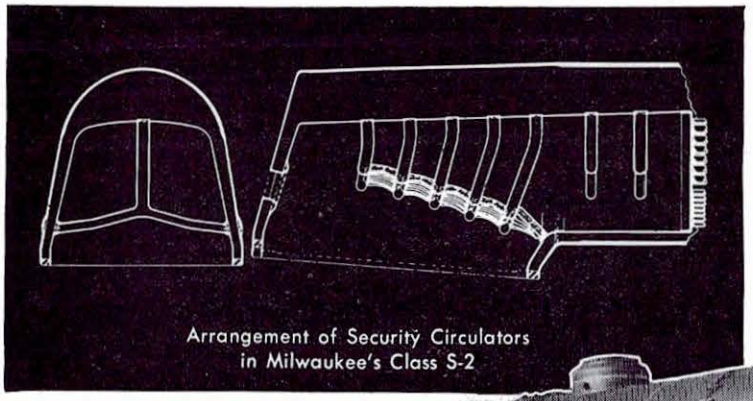
The commission also has been advised that the New York Central pleaded guilty in the federal district court at Syracuse, N. Y., on April 26 to an information in one count charging it with having violated the commission's explosives regulations. The carrier was fined $200. According to the commission's notice, the N.Y.C. placed second to the locomotive of a freight train a car placarded "explosives."

Young Proposes Postal Pick-Up Service to Replace Railway Express

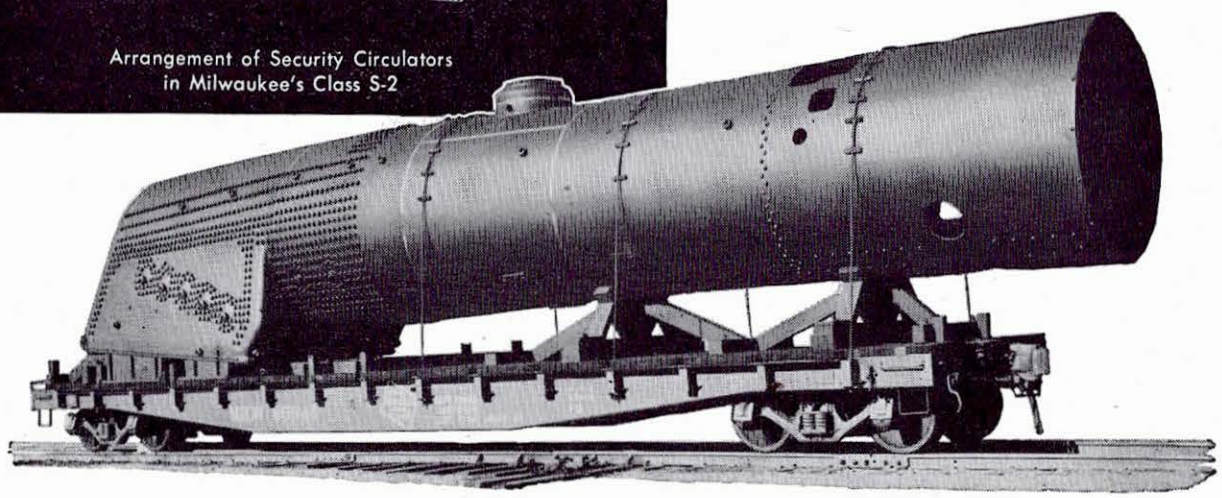
Establishment of a pick-up service by the parcel post section of the Post Office Department to take over the handling of small freight shipments from the Railway Express Agency was suggested last week by Robert R. Young, chairman of the Federation for Railway Progress. The present operation of the Railway Express Agency, which is owned by the railroads, is uneconomical and not in the public interest, Mr. Young said. He recommended the parcel post pick-up service as a logical first step toward rearranging the practices of the express agency. Robert J. Bowman, president of the Chesapeake & Ohio, has studied the proposal and is in full accord with it, the federation said. Study of the reorganization of the handling of small shipments was begun several months ago as the result of an initial suggestion by J. Haden Alldredge, a member of the Interstate Commerce Commission. The study was made with Mr. Alldredge's cooperation.

Mr. Young, who is also chairman of the C. & O., said he recommended ultimate elimination of the "express agency cartel which for nearly twenty-five years has stopped railway progress" in this field of the nation's economy. He urged the program of modernization in handling small shipments and emphasized that the railroads could haul these shipments as United States parcel post and receive a reasonable fee for the service. "Under the present authority of law the Post Office Department could accommodate 70 per cent of less-than-carload express shipments. The Post Office could handle such express shipments as fall within the seventy-pound parcel post limit, and there is already a noticeable drift in this direction. Such express shipments could go over to parcel post, for the Post Office Department undoubtedly would arrange to take care of this business by inaugurating a pick-up service to supplement its present deliveries, and

News Department continued on next left-hand page



Arrangement of Security Circulators in Milwaukee's Class S-2



Security Circulators in all-welded boilers of Milwaukee 4-8-4s

The Chicago, Milwaukee, St. Paul and Pacific 4-8-4 type locomotives are being modernized with all-welded boilers, in each of which seven Security Circulators are installed.

Security Circulators are designed for use in any type of steam locomotive, and installations range from three to nine Circulators each, according to the size of the firebox. In addition to providing effective support for a 100% brick arch, Security Circulators improve the circulation of water in the side water-legs and over the crown sheet, and lessen honey-combing, flue plugging and cinder cutting.

AMERICAN ARCH COMPANY, INC.

NEW YORK • CHICAGO

SECURITY CIRCULATOR DIVISION

thus give the public a complete door-to-door service similar to the one now provided by Railway Express."

At the present time six agencies are engaged in the handling of small shipments: They are parcel post, the Railway Express Agency, individual railroads, motor carriers, freight forwarders and air carriers. All claim to be losing money, Mr. Young said. Increasing Railway Express rates would be no answer, he pointed out. "Railway Express rates have been increased three times since December, 1946, and yet the agency's gross transportation revenues are no higher than they were before these increased rates were authorized. As the rates have been increased the volume of express shipments has declined." A parcel post pick-up service, Mr. Young added, might even enable the Post Office Department to show a profit rather than current losses in handling parcel post.

Additional 10 Per Cent Commuter Fare Rise Granted Chicago Roads

The Illinois Commerce Commission recently authorized an increase in commutation fares amounting to approximately 10 per cent for 14 railroads in the Chicago area. The commission granted the boost by its approval of a 20 per cent permanent increase in commutation fares, replacing the temporary 10 per cent increase granted in November, 1947.

Several of the carriers had asked for a permanent raise of 30 per cent in their fares, while others had requested slightly less. During the 10 months of hearings before the commission, all of the roads have emphasized the need for a boost to offset the increased costs of operation. It is understood that the carriers will continue their efforts to secure a full 30 per cent increase.

The following roads are affected by the increase: Illinois Central; Chicago & North Western; Chicago, Burlington & Quincy; Chicago, Rock Island & Pacific; Gulf, Mobile & Ohio; Chicago & Western Indiana; Chicago, Aurora & Elgin; Chicago, Milwaukee, St. Paul & Pacific; Minneapolis, St. Paul & Sault Ste. Marie; Atchison, Topeka & Santa Fe; New York Central; Pennsylvania; Chicago North Shore & Milwaukee; and the Wabash.

March Truck Traffic

Motor carriers reporting to the American Trucking Associations transported in March 2,709,473 tons of freight, an increase of 12.2 per cent over the February total of 2,415,743 tons and an increase of 15.6 per cent over the 2,343,357 tons hauled in March, 1947. The A.T.A. index number, based on the 1938-40 average monthly tonnage of the reporting carriers, was 233.

The March figures, according to the A.T.A., are based on comparable reports from 284 carriers in 45 states. Carriers in the Eastern district reported an increase of 12.1 per cent over February and 15.6 per cent over March, 1947; carriers in the Southern region reported increases of 15.1 per cent and 28.2 per cent, respectively; and carriers in the Western district reported respective increases of 11.4 per cent and 12.7 per cent.

Freight Car Loadings

Compilations of carloadings of revenue freight for the week ended May 8 were not available when this issue went to press.

Loading of revenue freight for the week ended May 1 totaled 891,638 cars, and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading For the Week Ended Saturday, May 1			
District	1948	1947	1946
Eastern ..	160,990	165,099	139,014
Allegheny .	183,137	189,345	127,583
Pocahontas	77,766	72,709	21,168
Southern .	145,000	137,144	118,025
Northwest.	129,881	127,154	96,783
Cent. West.	125,874	127,026	109,068
Southwest.	68,990	64,097	59,670
Tot.West.Dis.	324,745	318,277	265,521
Tot. All Rds.	891,638	882,574	671,311
Commodities:			
Grain & Gr. prods. ..	38,672	43,951	35,428
Livestock .	14,762	15,479	18,399
Coal	204,191	178,672	32,606
Coke	13,372	14,650	5,746
Forest prods.	44,711	47,267	45,879
Ore	80,586	65,884	27,167
Mdse. l.c.l.	111,350	124,149	130,280
Misc.	383,994	392,522	375,806
May 1	891,638	882,574	671,311
April 24 ..	852,309	893,712	660,264
April 17 ..	785,668	865,844	650,843
April 10 ..	683,852	757,839	649,298
April 3 ..	661,807	715,159	643,644
Cumulative total, 18 weeks	13,731,657	14,632,861	13,008,339

Disappearance of Colleague Should Concern Train Crew

Evidence of a railroad's liability, under the Federal Employers Liability Act, for death or injury sustained by a train-crew member who disappears while the train is en route may be found in the failure of other crew members to take prompt action to ascertain what happened to their missing colleague. The United States Supreme Court has so ruled in remanding such a case for retrial in the California courts.

The case was *Anderson v. Atchison, Topeka & Santa Fe.* The complainant, Doris Anderson, is administratrix of the estate of L. C. Bristow, a deceased Sant Fe conductor, whose death resulted from "exposure to very cold weather," from the time he fell from a train on which he was on duty until he was rescued. The complaint's allegations, as summarized by the Supreme Court, asserted that the decedent fell from the train's rear vestibule while engaged in checking a train-order signal at Gallaher, N. M. The accident occurred at about 5:30 a.m. on November 24, 1942, and the decedent's fall "resulted in injuries which made it impossible for him to secure help by his own efforts."

At the next station stop, St. Vrain, N. M., other members of the crew "made note of the absence" of their colleague, but took no further action until the train reached the fourth station stop thereafter, Yeso, N. M. There the "regular train conductor" directed the local Santa Fe employees to wire other employees along the route the train had traversed to ascertain the whereabouts of the missing conductor. The Yeso employees, as the complaint put it, "carelessly and negligently" failed to transmit any message "for an unnecessarily long period of time"; and when the message was finally received by employees at Clovis, N. M., they "carelessly and negligently failed to institute and pursue a search within a reasonable period of time." When the search was made, Conductor Bristow was found lying alongside the track adjacent to the point where he had fallen from the train. His death followed three days later.

At the original trial, a judgment for the defendant railroad was entered by the trial judge on the basis of a finding that the allegations of the complaint, even if true, were insufficient to support a judgment for the plaintiff. This was affirmed by the Supreme Court of California, and the plaintiff's appeal from that affirmation brought the case to the United States Supreme Court. In remanding the case, the latter said it was "unable to agree that had petitioner been permitted to introduce all evidence relevant under her allegations, the facts would have revealed a situation as to which a jury under appropriate instructions could not have found that decedent's exposure and consequent death were due 'in whole or in part' to failure of respondent's agents to do what 'a reasonable and prudent man would ordinarily have done under the circumstances of the situation.'"

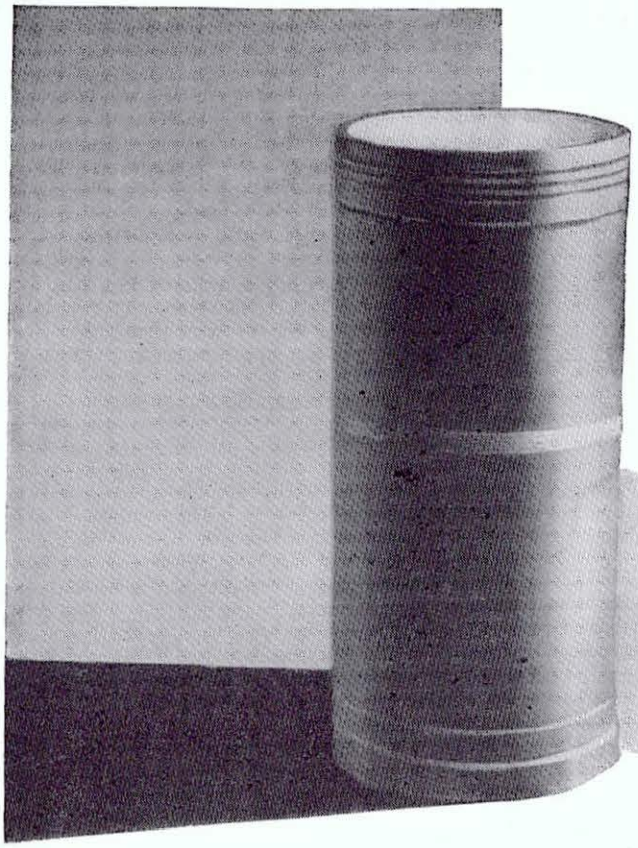
British RR Nationalization Narrows Shippers' Rights

The nationalization of transportation in Great Britain this year means that the right of the shipper to select the kind of transportation best suited to his need has been drastically curtailed, perhaps wiped out altogether, E. Grover Plowman, vice-president, traffic, United States Steel Corporation, said recently in an address at a meeting of the Maine and New Hampshire section of the New England Shippers Advisory Board in Portland, Me.

Four unsolved problems now face the British user of transportation, the speaker added. One is the question as to what will take the place of the freedom of routing choice and another is to what extent a shipper will be free to use his own vehicles in transporting goods. A third problem, he said, is that the Transport Commission "does not need, if it does not so choose, to adjust freight

News Department continued on next left-hand page

HSGI DIESEL LINERS



Friction made *Friendly*

Hunt-Spiller are exclusive railroad sales representatives for Double Seal Piston Rings made for Diesel and other services. Double Seal rings are cast from Hunt-Spiller *Air Furnace* Gun Iron.

A honed Hunt-Spiller Diesel liner is about as close to the frictionless ideal as anything can get; that is evident from its mirror-like surface. But examine it more closely. Notice the minute cross-hatches. They are the oil traps which make for better lubrication and piston ring break-in.

This superior finish is made possible by the dense, evenly graphited structure of Hunt-Spiller Gun Iron, a quality which has long made it preferred to steam locomotive bushings. Equally successful as a material for Diesel liners, HSGI liners are made for all types of Diesel engines, either honed, chrome plated, or in rough castings for finishing in your own shop.

HUNT SPILLER GUN IRON HSGI *AIR FURNACE PROCESS*

HUNT-SPILLER MFG. CORPORATION

N. C. RAYMOND, *President* E. J. FULLER, *Vice-Pres. & Gen. Mgr.*

383 Dorchester Ave. ★ South Boston 27, Mass.

Canadian Representatives: Joseph Robb & Co., Ltd., 4050 Namur St., Montreal 16, P. Q.

Export Agents:
International Rwy. Supply Co., 30 Church Street, New York 7. N. Y.

Cylinder Bushings	Crosshead Shoes	Dunbar Sectional Type Packing
Cylinder Packing Rings	Hub Liners	Duplex Sectional Type Packing
Pistons or Piston Bull Rings	Shoes and Wedges	for Cylinders and Valves
Valve Bushings	Floating Rod Bushings	(Duplex Springs for Above
Valve Packing Rings	Light Weight Valves	Sectional Packing)
Valve Bull Rings	Cylinder Liners and Pistons for Diesel Service	Cylinder Snap Rings
		Valve Rings, All Shapes

charges in such a way as to encourage efficient use of transportation by the shipper." The fourth problem described was whether the right of entry of new competitors into the transportation field is still available, or whether new modes would not be stifled by the elimination of competition.

Mr. Plowman said that the 100 per cent nationalization of British railroads last January 1 took into government 1,500,000 persons, or 6 per cent of all persons employed in British industry. At the same time, the British government took over the operation of canals, street cars, subways, non-local trucking, and all hotels, docks and warehouses owned by the acquired enterprises. This nationalization, he asserted, was caused, at least in part, by reasons other than the political and social philosophy of the Labor Party. One of these reasons, Mr. Plowman declared, was the failure of the railroads to work out integration, with the result that much railroad work became inter-company detail rather than constructive transportation.

Other reasons for the adoption of nationalized transportation which the speaker listed were the "ever-increasing complexities" of railroad charges; the failure to develop personnel practices which employees considered fair; the apprehension that the railroads "would be financially unable to rehabilitate their properties and improve their facilities to the extent necessary to meet postwar conditions;" and the concern of common stockholders that the railroads, under private ownership, would issue additional preferred securities which would impair the value of the common stock. Mr. Plowman observed that railroad charges in Great Britain today are about 55 per cent higher than before the recent war and that, "clearly, lower freight rates were not the reason for nationalization."

A list of current publications appears on page 222 in this issue.

SUPPLY TRADE

E. W. Kettering, whose promotion to chief engineer of the **Electro-Motive Division** of General Motors Corporation at La Grange, Ill., was reported in *Railway Age* of April 24, studied mechanical engineering at Cornell University. In 1930 he joined the Winton Engine Company, becoming experimental engineer assisting in the development of the unit injector which later became an important contribution to the new engine on which the Winton staff and General Motors Research Laboratories were collaborating. He joined Electro-Motive at Detroit, Mich., in 1938 as experimental engineer, later becoming staff engineer in charge of engines. He was advanced

E. W. Kettering

to senior project engineer in 1942, and was subsequently promoted to assistant chief engineer, which post he held at the time of his new appointment.

R. M. Dilworth, whose promotion to engineering assistant to vice-president of the **Electro-Motive Division** of General Motors Corporation at La Grange, Ill., was reported in *Railway Age* of April 24, gained his initial railroad experience in the gas-electric rail-car division of the General Electric Company. He started with G. E. in 1910 as a construction machinist, and shortly thereafter became an experimental machinist in the company's rail-car division. After advancing through several positions connected with Diesel construction, Mr. Dilworth went to the Philippines as construction superintend-

R. M. Dilworth

ent for G. E. He later served as senior civilian engineer, Army Engineer Corps, in charge of the Manila and Subic Bay district. At the conclusion of World War I, he returned to the U. S., joining the Erie (Pa.) works of G. E. as manufacturing engineer in charge of marine turbines and gears. In 1923 he joined the railway department of G. E. and headed the section working on gas and Diesel engine equipment. Mr. Dilworth became associated with the Electric-Motive Engineering Company (now Electro-Motive Division of G. M. C.) as chief engineer in 1926, and has held that position continuously until his recent appointment.

L. F. Campbell, whose appointment as executive engineer of the **Electro-Motive Division** of General Motors Corporation at La Grange, Ill., was reported in *Railway Age* of April 24, was graduated from Yale University's Sheffield Scientific School in 1920. He operated an automobile sales and service business in New Haven, Conn., until 1929, when he joined the Pratt & Whitney Aircraft Co. as a carburetor inspector.

L. F. Campbell

He advanced through positions as assistant chief inspector and chief production engineer to that of factory manager of the firm's plant in Kansas City, Mo. In December, 1944, he went to Chicago as vice-president and works manager of the precision gear department of Foote Brothers. Mr. Campbell became associated with Electro-Motive in 1945, and was serving as chief production engineer at the time of his new appointment.

EQUIPMENT AND SUPPLIES

9,052 Freight Cars Built Last Month

Freight cars produced last month for domestic use totaled 9,052, including 2,326 built in railroad shops, compared with March production of 9,302 cars, which included 2,362 built in railroad shops, it has been announced by the American Railway Car Institute. New freight cars ordered last month for domestic use, the institute said, amounted to 18,252, including 6,262 ordered from railroad shops, compared with March orders for 13,427 cars, including 2,050

News Department continued on next left-hand page

GREATER AVAILABILITY

Texaco Dieseltex HD keeps engines clean, assures extra mileage between overhauls.

TODAY'S demands for more power from railroad Diesels mean increased engine temperatures. So lubrication — particularly of wrist pins, pistons and cylinders — has a tougher-than-ever job. But *Texaco Dieseltex HD* handles it easily and is designed to reduce both maintenance costs and fuel consumption.

Texaco Dieseltex HD is fully detergent and dispersive . . . and a revolutionary new heavy-duty additive gives it greater-than-ever resistance to oxidation, heat and corrosion. *Texaco Dieseltex HD* keeps top decks clean . . . rings free . . . valves active . . . assures extra thousands of miles between overhauls.

Texaco Dieseltex HD more than meets the most stringent requirements of all leading Diesel locomotive manufacturers, and —

More Diesel locomotives in the United States are lubricated with Texaco than with any other brand.

You'll find Texaco Lubrication Engineers "talk your language" . . . and only Texaco offers *systematic* engineering service with exclusive tests and controls that permit quick, *positive* evaluation of both engine and lubricating oil. Call the nearest Railway Sales Division office listed below, or write The Texas Company, *Railway Sales Division,* 135 East 42nd Street, New York 17, N. Y.

NEW YORK • CHICAGO • SAN FRANCISCO • ST. PAUL • ST. LOUIS • ATLANTA

TEXACO

TEXACO Dieseltex H. D.

FOR ALL RAILROAD DIESELS

Tune in...Texaco Star Theatre every Wednesday night featuring Gordon MacRae and Evelyn Knight...ABC Network

State by State we're great for Freight

Across the top of these States United,
We see that your freight is expedited.
That's why more shippers, every day,
Now ship the *great* Great Northern way!

GREAT for Freight

GREAT NORTHERN RAILWAY

GEORGE F. HARDY
General Freight Traffic Manager
Great Northern Railway,
St. Paul 1, Minn.

ordered from railroad shops. The backlog of freight cars on order and undelivered on May 1, was 134,176, including 40,118 on order from railroad shops.

SIGNALING

The **New York, New Haven & Hartford** has ordered equipment from the General Railway Signal Company for the installation of an inductive carrier-type train communication system. The fixed station, to be located at Cos Cob, Conn., will maintain two-way voice communication with wire maintenance trains covering the territory north to Danbury, Conn., northeast to New Haven, Conn., and south to New York.

FINANCIAL

New Security Issues

The following **application** has been filed with the Interstate Commerce Commission:

Chesapeake & Ohio.—To assume liability for $4,450,000 of equipment trust certificates, the proceeds of which will be applied toward the purchase of the following equipment:

Description and Builder	Estimated Unit-Price
500 70-ton all-steel covered hopper cars (Ralston Steel Car Co.)	$ 4,894
10 type 0-8-0 switching locomotives, each with 8,000-gal. tenders (Baldwin Locomotive Works)	119,119
4 2,000-hp. Diesel-electric passenger locomotives (Electro-Motive Div., General Motors Corp.)	214,242

The certificates, to be sold on the basis of competitive bidding, would be dated May 15 and would mature in 10 annual installments of $445,000, starting May 15, 1949.

Division 4 of the I.C.C. has **authorized:**

Pennsylvania.—To assume liability for $9,600,000 of series T equipment trust certificates, part of a proposed over-all issue of $39,240,000 of series T certificates, the proceeds of which will be applied toward the purchase of equipment estimated to cost $49,053,500, as described in *Railway Age* of April 17, page 66. Proceeds from the sale of the immediate issue will be applied toward the cost of 6 6,000-hp. freight, 5 4,500-hp. freight, 3 4,000-hp. freight, 21 1,000-hp. switching and 13 380-hp. switching locomotives (all Diesel-electrics) and 12 sleeping cars, estimated to cost $11,959,000. The certificates will be dated May 1 and will mature in 15 annual installments of $640,000, starting May 1, 1949. The report also approves a selling price of 99.3899 with a 2½ per cent interest rate, the bid of Halsey, Stuart & Co., and associates, on which basis the average annual cost will be approximately 2.59 per cent.

Canadian Pacific.—*Proposed $80 Million Outlay.*—W. A. Mather, president of this company, asked the stockholders at their annual meeting in Montreal, Que., on May 5 to approve capital ex-

SOUTHERN PINE LUMBER COMPANY
CAR DECKING • CAR SIDING • CAR ROOFING • CAR FRAMING • CAR LINING
CROSSING PLANK • TIMBERS • GENERAL MAINTENANCE LUMBER
MILLS: DIBOLL AND PINELAND, TEXAS
SALES OFFICE: TEXARKANA U.S.A.

penditures of $79,670,871, of which $54,244,072 is to provide for new rolling stock. Mr. Mather said that, although the days of extensive railroad building are long past, there is still need for improvement and expansion. Traffic density is increasing and enlarged and modern terminal facilities, heavier track, new signal systems and more rolling stock will be required.

Lehigh Valley.—*Bonds.*—Division 4 of the Interstate Commerce Commission has authorized this road to extend from June 1 to June 1, 1950, the maturity date of not exceeding $5,000,000 of first mortgage bonds, of which $47,000 are held by the Consolidated Real Estate Company, a subsidiary of the applicant, and $4,953,000 by the public. The bonds will continue to bear interest at the rate of 4 per cent. As noted in *Railway Age* of April 24, page 74, the L. V., because of the maturity between April 1, 1949, and March 1, 1957, of bonds totaling approximately $46,000,000, contemplates the debt-readjustment plan to provide for their payment and, at the same time, to achieve a sounder financial structure in other respects. Provisions for such voluntary readjustments were added to the Interstate Commerce Act by the recently enacted "Mahaffie" bill.

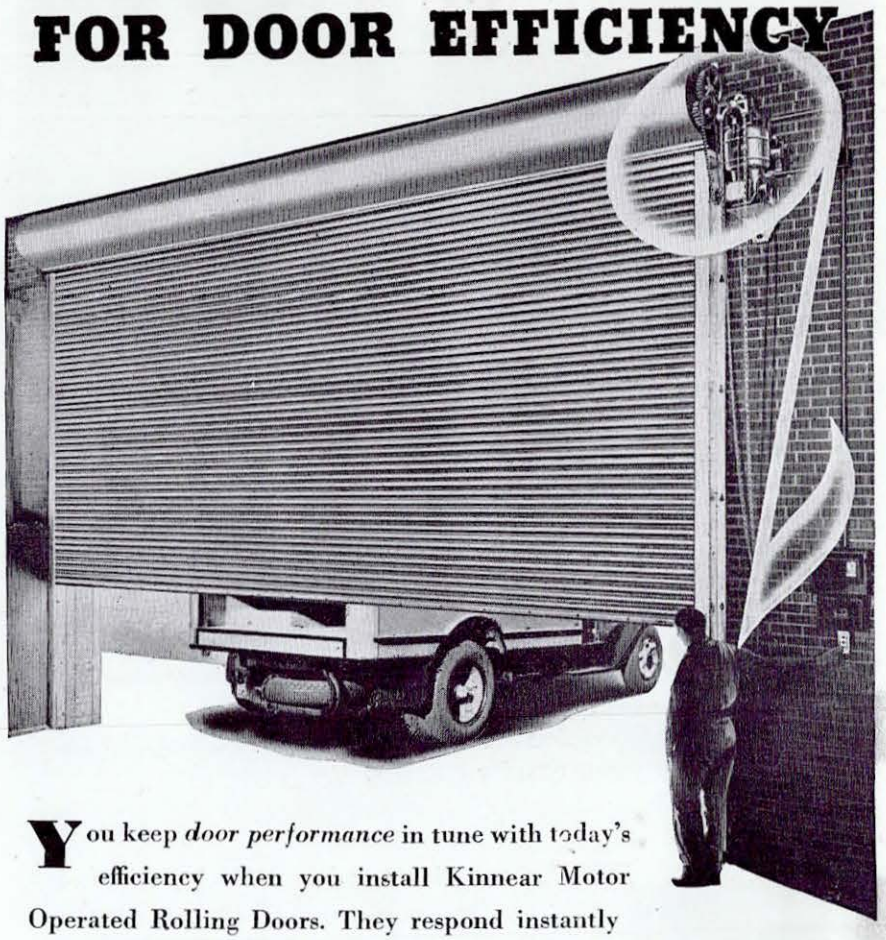
New York, Chicago & St. Louis.—*Lease of Wheeling & Lake Erie.*—Nickel Plate directors have approved a plan for the long-term lease of the Wheeling & Lake Erie on terms to be agreed upon, subject to approval by the Interstate Commerce Commission and the stockholders. A plan to reduce arrears on the Nickel Plate's 6 per cent preferred stock, now about $84 a share, also has been adopted.

New York, New Haven & Hartford.—*Control Claimed.*—Frederic C. Dumaine, chairman of the Amoskeag company, an investment firm, has announced he holds 390,000 shares of this road's 5 per cent preferred stock, which he says entitles him to elect 11 of 16 members of the board of directors at the stockholders' meeting. The number of shares of this issue totals 453,000 but 63,000 shares are held by the Irving Trust Company as trustee for the old company's 6 per cent secured bonds of 1940, and there is some uncertainty as to whether these 63,000 shares can be voted at the meeting.

CONSTRUCTION

Chicago & North Western.—This company has begun work in connection with an 18-mi. extension of its line northwesterly from Belle Fourche, S. D., in Butte county, S. D., and Crook county, Wyo. Culverts are being installed by the Armco Drainage & Metal Products, Inc., of Middletown, Ohio, and the railroad's own forces.

THE RIGHT NOTES FOR DOOR EFFICIENCY

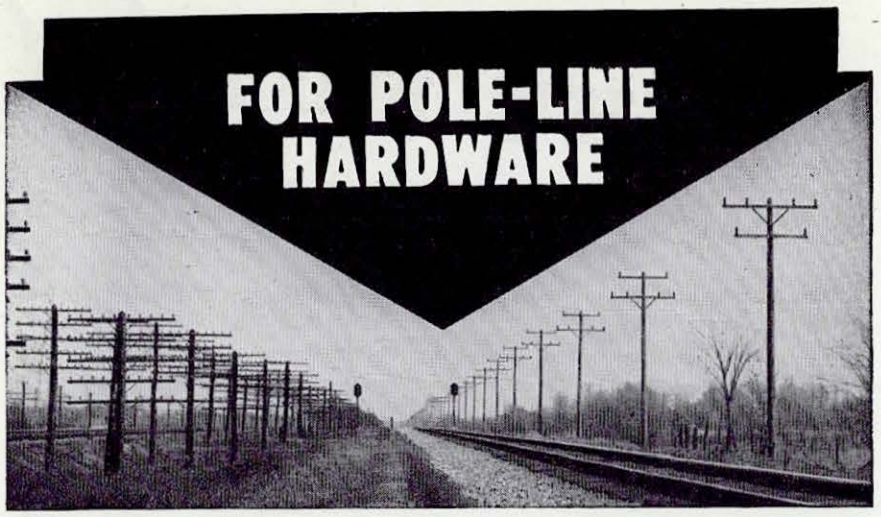


You keep *door performance* in tune with today's efficiency when you install Kinnear Motor Operated Rolling Doors. They respond instantly to the touch of a control button, from one or more switches placed wherever most convenient. Their smooth, efficient, *vertical* action saves space, prevents accidents, avoids traffic tie-ups. They coil compactly out of the way overhead, safe from damage. The husky Kinnear Motor Operator stands up under hardest use. And there are extra years of protection and low-maintenance service in Kinnear's rugged, all-steel construction, as proved by hundreds of installations that have served continuously for 20, 30 and 40 years! For the "right notes" on efficient doors, send for Kinnear details today.

The KINNEAR MANUFACTURING CO.
Factories: 2020-40 Fields Avenue, Columbus 16, Ohio
1742 Yosemite Avenue, San Francisco 24, California
Offices and Agents in Principal Cities

SAVING WAYS in DOORWAYS

KINNEAR ROLLING DOORS



use this comprehensive, local service

Graybar's Railroad Department can help you select, obtain, and apply the best items for any pole-line project

Graybar distributes everything in railway pole-line hardware, including specially designed point-type transposition brackets for single and three channel telephone carrier circuits.

Graybar also supplies wood and steel poles and cross-arms; porcelain, glass, and rubber insulators; standard BB and extra-high-strength iron telephone wire, as well as a full range of other conductors; connectors; line-protective devices; linemen's tools and safety equipment.

At the Graybar office and warehouse near you, there are specialists who can save you time in obtaining first-quality items for *all* your electrical needs, including railway communication equipment, lighting and lamps, repair-shop power apparatus and electric tools. *Graybar Electric Company. Executive offices: Graybar Building, New York 17, N. Y.* 4847

OFFICES AND WAREHOUSES IN OVER 100 PRINCIPAL CITIES

The general contract for grading and track laying has been awarded to the H. W. Nelson Company of New York. The project will cost an estimated $780,000.

Other projects begun recently, or scheduled to begin in the near future, are as follows (estimated costs in parentheses): Rebuilding of 240 ft. of dock at Milwaukee, Wis., with work being performed by the Great Lakes Dredge & Dock Co. and the railroad ($47,090); installation of a drop pit with motor driven hoist and table tops at the Chase yard enginehouse in Milwaukee, the work on which will be completed by the road and a contractor not yet selected ($42,890); construction by the road's forces of three additional tracks and the making of various track changes in yards six, seven and eight, at Proviso, Ill. ($157,130); installation by the Lasker Boiler & Engineering Corp., of Chicago, and the road's forces, of a new boiler and auxiliary equipment at the engine terminal power plant in Huron, S. D. ($98,550); installation by the road of jacking pads in 29 stalls and the renewing of floor in the enginehouse building, at Milwaukee ($51,211); modernization of the passenger station at Duluth, Minn., by the Kileen & Wille Construction Co. and the Chicago, St. Paul, Minneapolis & Omaha (part of the C. & N. W. System) ($31,100); remodeling and modernization of a passenger station at Kenosha, Wis., by the road and a contractor not yet named ($48,000); and the construction at Proviso of a million-gallon fuel oil storage facility, by the Chicago Steel Tank Company and the railroad.

Denver & Rio Grande Western.—This road is installing concrete linings in four tunnels between Denver, Colo., and the Moffat Tunnel, at a gross cost of $100,000. Industrial trackage costing some $31,000 is being constructed by the Rio Grande at Craig, Colo.

ABANDONMENTS

Applications have been filed with the Interstate Commerce Commission by:

Bingham & Garfield.—To abandon its entire line, extending approximately 20.3 miles from a connection with the Union Pacific at Garfield, Utah, to Bingham. The applicant advised the commission that the Kennecott Copper Corporation, principal user of the line (and of which the B. & G. is a wholly-owned subsidiary), is now using a plant track and other facilities, including three miles of the track proposed to be abandoned by the B. & G., to haul its products. The B. & G. also told the commission that other traffic can be handled by the Denver & Rio Grande Western, which, in an accompanying application, seeks com-

mission authority to acquire approximately 2 miles of B. & G. track in the vicinity of Garfield.

Norfolk & Western.—To abandon a 5-mile branch from Honaker, Va., to Blackford. The applicant told the commission that the volume of freight traffic over the branch is insufficient to justify its continued operation and maintenance.

Texas Electric.—To abandon its entire line, extending approximately 160 miles from Denison, Tex., to Waco through Dallas, and to abandon operation under a trackage rights agreement over approximately 5.6 miles of the Dallas Railway & Terminal Co. The applicant told the commission that it has lost most of its freight traffic to motor carriers and that it is now operating at a loss.

Division 4 of the I.C.C. has **authorized:**

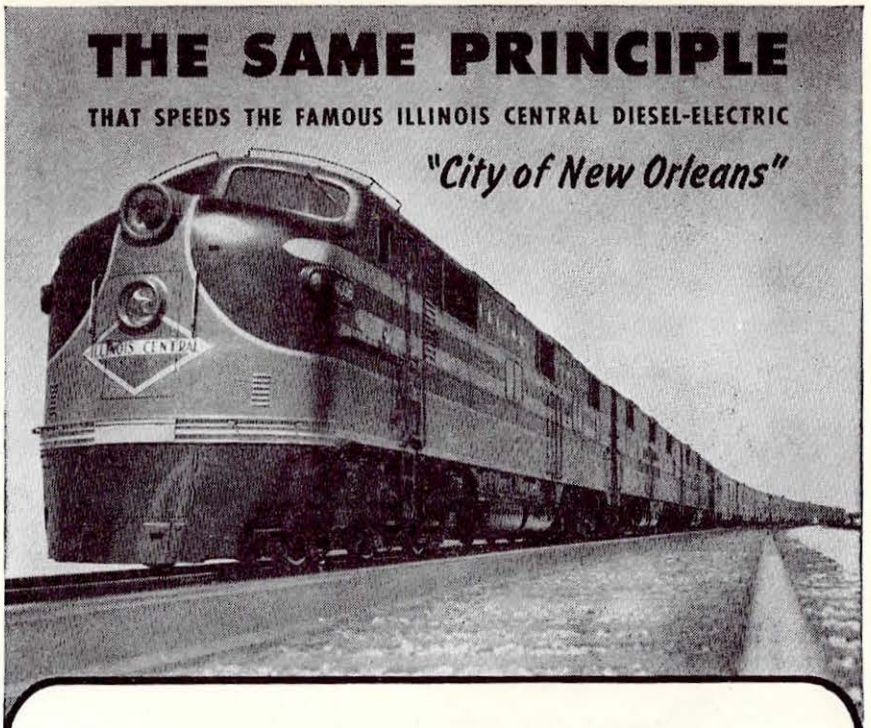
The **New York, New Haven & Hartford** to abandon two branch lines, one from Hawleyville, Conn., to Litchfield, 32.4 miles, and the other from Hawleyville to Southbury, 9.1 miles. With respect to the former branch, the commission said that all points in the territory involved can be served by motor carriers. Noting that the line has been operated at a loss, it said that an "unreasonable amount" of money must be spent to rehabilitate the track and structures if operations are to be continued. It has not been shown, it added, that, after such rehabilitation, the line can be operated at a profit. As for the Southbury branch, the commission concluded that while it is probable that some increase in the volume of freight would be experienced, it has not been indicated that such increase would be sufficient to make the operation of the branch self-sustaining financially. The branch, it said, is being operated at a substantial loss, adding that the New Haven again would have to make "unreasonably large" expenditures if operation of the line is to be continued.

RAILWAY OFFICERS

TRAFFIC

Albert W. Hendrickson, freight traffic manager of the Minneapolis & St. Louis at Minneapolis, Minn., and **Roy W. Nelson,** eastern traffic manager at New York, have been appointed assistant vice-presidents, with the same headquarters. **Guy D. Larrabee,** general agent at St. Louis, Mo., has been advanced to traffic manager there, succeeding **A. C. Leake,** promoted to vice-president in charge of traffic. Mr. Larrabee is succeeded at St. Louis by **Hugh W. Anderson,** commercial agent at San Francisco.

William E. Nicholson, whose promotion to general freight agent of the Great Northern, at Seattle, Wash., was reported in *Railway Age* of April 3, was born on January 26, 1900, at Kansas



READY-POWER

GAS-ELECTRIC POWER UNITS

FOR CONTINUOUS ELECTRIC TRUCK OPERATION

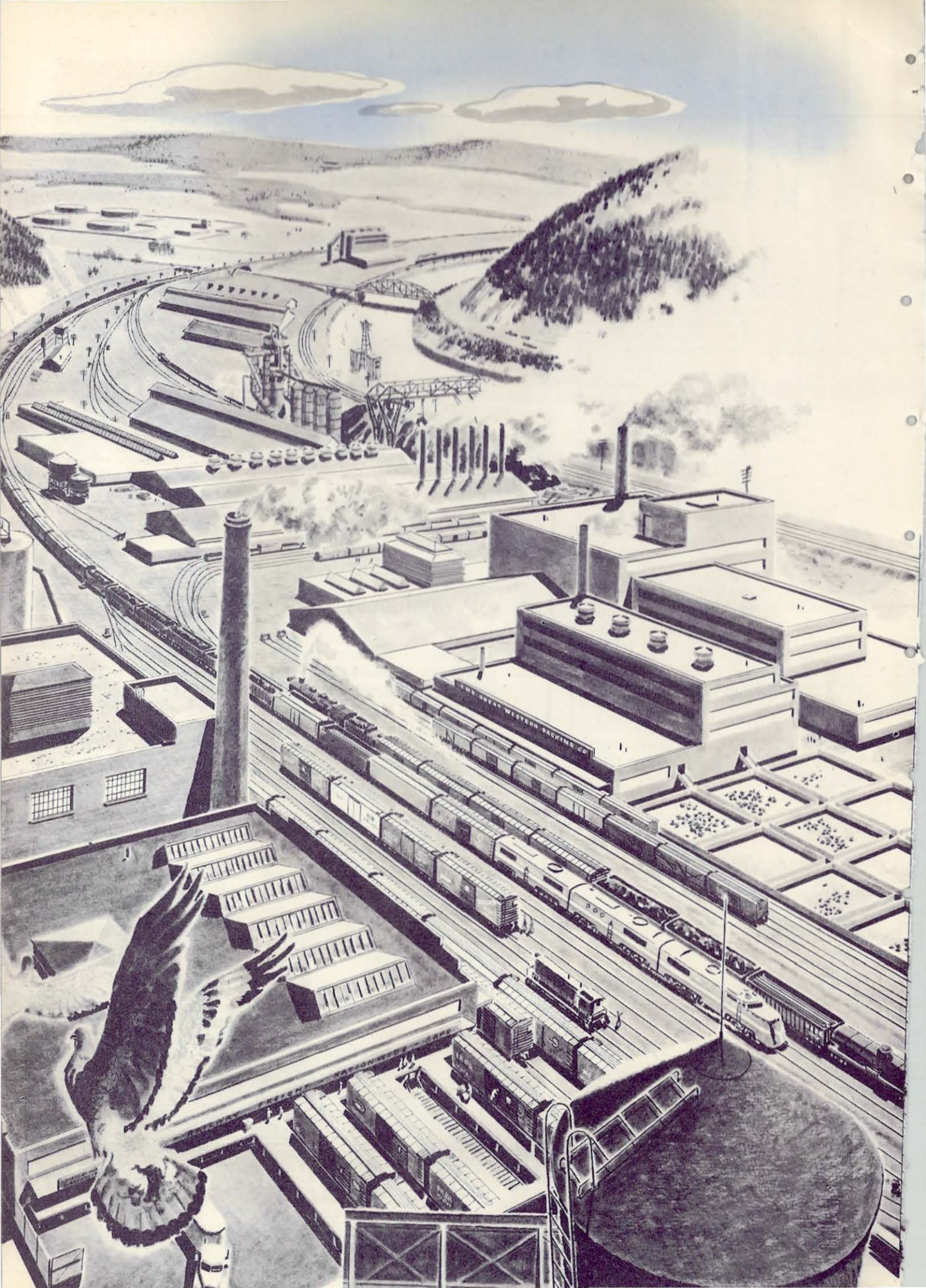
A combustion engine coupled to a direct current generator provides the constant power, flexibility and economy for which modern Diesel-electric streamliners are noted. This same principle of power is applied to electric trucks by equipping them with Ready-Power Units. Dependable electric power, generated on the truck chassis, permits operation at constant speeds for unlimited periods. All makes of electric trucks can be converted to Ready-Power. Specify Ready-Power for new trucks.

I.C.R.R. Yale electric truck equipped with Ready-Power. Ready-Power Units are used extensively in Illinois Central warehouses and repair shops.

THE READY-POWER CO.

3838 Grand River Ave., Detroit 8, Michigan

News Department continued on second left-hand page.


GREAT WESTERN BREWING CO.
RAILWAY FREIGHT - NATION-WIDE - SAFE

Making the Nation Great by Making the **Nation Small**

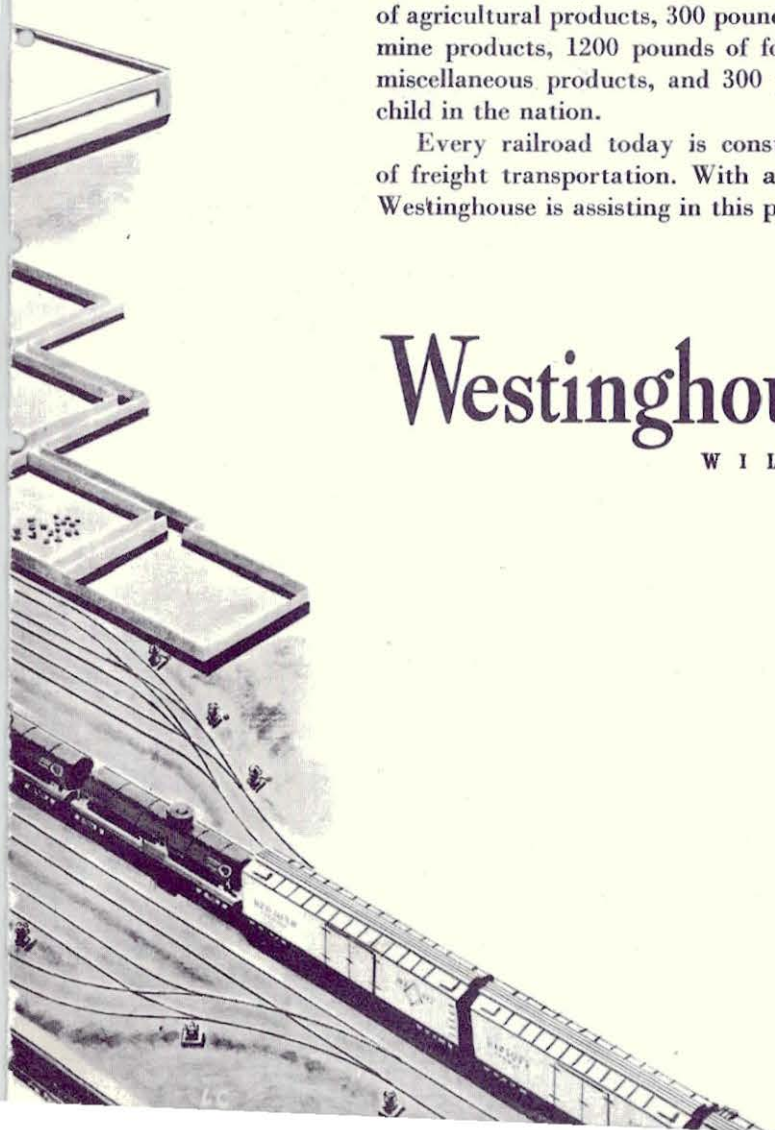
Speedy, luxurious new streamlined passenger trains may catch the eye and get the publicity—but it's the *freights*, rumbling over the mountains and through the deserts, serving cities and towns and hamlets, that keep this country great.

A network of 226,000 miles of rail makes the nation only a few hours wide, brings all its rich resources and varied productive capacity within arm's reach of every citizen everywhere. The food on the average table is gathered from Florida and California, from Nebraska and Maine and Texas. It has traveled more miles by rail than many individuals travel in a lifetime.

Clothes, cars, homes, furniture and equipment—all are gathered from the four corners of the country, journey thousands of miles before and after they are made. And the railroads handle more than twice as much of this commercial freight as all the other carriers—highway, waterway, pipeline and air—combined!

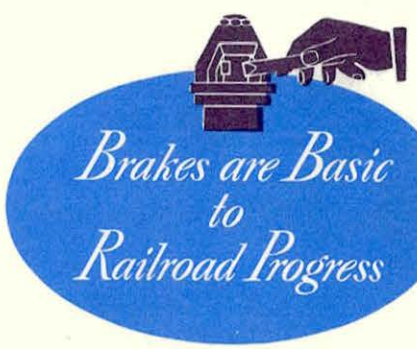
In one recent year, the railroads originated and handled an average of 2100 pounds of agricultural products, 300 pounds of animals and products, ten thousand pounds of mine products, 1200 pounds of forest products, 5200 pounds of manufactured and miscellaneous products, and 300 pounds of lcl freight, for every man, woman and child in the nation.

Every railroad today is constantly aiming at increasing the overall efficiency of freight transportation. With a continuing flow of new developments in brakes, Westinghouse is assisting in this program.



Westinghouse Air Brake Co.

WILMERDING, PA.



The Nation's Rations
(Shipped P.D.Q.)

The apples and wheat
Fish, butter and meat
We haul transcontinental.
Our service to you
On things you chew
Is simply monumental!

GREAT for Freight

GREAT NORTHERN RAILWAY

GEORGE F. HARDY
General Freight Traffic Manager
Great Northern Railway,
St. Paul 1, Minn.

City, Mo. He began his railroad career with the Chicago, Burlington & Quincy in 1917, at Kansas City, and joined the Kansas City Southern in that city in 1922 as city freight agent. In 1928 Mr. Nicholson entered the service of the G. N. as traveling freight agent, and

William E. Nicholson

he later advanced through positions as commercial agent and general agent at Sioux City, Iowa, and general agent at Spokane, Wash. He was advanced in 1941 to assistant general freight agent at Minneapolis, Minn., which post he held at the time of his new appointment.

The Chicago South Shore & South Bend has announced the following changes in its traffic department at Chicago: **R. E. Jamieson,** general passenger agent, appointed passenger traffic manager; **Dwight G. Wood,** assistant general passenger agent, appointed to succeed Mr. Jamieson; **William J. Raleigh, Jr.,** general freight agent, promoted to freight traffic manager in charge of rates and divisions; **Walter M. Slavik,** general agent, advanced to general freight agent—solicitation; **Frank H. Hiskes,** chief of tariff bureau, promoted to general freight agent; and **W. Leslie Baldwin,** chief rate clerk, advanced to chief of tariff bureau.

OPERATING

Len Mayrisch, whose appointment to the newly created position of manager of freight protection and station service of the Southern Pacific, with headquarters at San Francisco, Cal., was reported in *Railway Age* of May 1, was born in Alameda, Cal., on September 5, 1891. He began his railroad career with the S. P. in 1907, as a draftsman at Oakland, Cal., and subsequently held various engineering positions in the maintenance of way department. Mr. Mayrisch later transferred to the operating department, and in October, 1935, was appointed supervisor of merchandise service in the general manager's office at San Francisco. His next post was that of inspector and supervisor of station service, which position he held until June, 1944, when he was advanced to office manager for the vice-president and general manager. Mr.

INTERNATIONAL
HIGH GRADE TREATED
TIES

Long-lived A.R.E.A. Specification Ties — scientifically treated and held to high quality standards. Lowest in ultimate cost for today's high speed track.

INTERNATIONAL CREOSOTING AND CONSTRUCTION CO.
Producers of Treated Ties, Poles, Piles, etc
GALVESTON-BEAUMONT
TEXARKANA

Len Mayrisch

Mayrisch was serving in the latter capacity at the time of his recent appointment.

E. H. Locke, whose promotion to division superintendent of the Canadian National, with headquarters at Belleville, Ont., was reported in *Railway Age* of April 24, began his railroad career in 1914, as a messenger with the Grand Trunk (now Grand Trunk Western and a part of the C. N.), at Montreal, Que. He subsequently held various positions until 1929, when he was appointed

E. H. Locke

traveling inspector. He was promoted in 1939 to district supervisor of car service, and, two years later, was appointed trainmaster at Montreal. Mr. Locke's next post was that of assistant superintendent, which position he also held later at London, Ont. He was transferred to Port Huron, 1947, as superintendent of terminals, in which capacity he was serving at the time of his new appointment.

N. L. Dunning, whose promotion to superintendent of the Nashville (Tenn.) terminals of the Louisville & Nashville and the Nashville, Chattanooga & St. Louis was reported in *Railway Age* of April 24, was born on June 6, 1897, at Howell, Ind. He entered the service of the L. & N. in 1913 as an engine crew call boy, later serving as

FOR BETTER PROFITS . . . USE PRESSURE-TREATED WOOD

What are YOU doing to cut this repair bill?

The average "doctor bill" for the nation's freight cars was $212.69* in 1946!

Every mile that each freight car traveled the repair cost averaged more than 1.2 cents.

Some of this expense was unavoidable—toll paid for aged equipment. But some *is avoidable*—through the use of pressure-treated wood.

Many major railroads are increasing freight car service between shop trips, by using pressure-treated wood for decks, for gondola siding, for stringers, nailing strips and other vulnerable parts. If you are now installing untreated wood, a big savings opportunity is ready and waiting.

Today—saving is the surest highway to profits. Let us help you reduce your share of excessive car repair costs, with pressure-treated wood.

In new cars and for repairs, specify pressure-treated wood.

(*Figures from A.R.C.I. statistics)

KOPPERS

PRESSURE-TREATED WOOD

KOPPERS COMPANY, INC.

PITTSBURGH 19, PENNSYLVANIA

an apprentice machinist and machinist. Mr. Dunning was appointed safety agent of the Evansville division in 1927, and

N. L. Dunning

advanced to safety inspector in 1930. From 1941 to 1945, he held the post of assistant trainmaster at various points on the L. & N., and in November of the latter year he was appointed trainmaster at St. Louis, Mo. Mr. Dunning was transferred to Nashville on March 1, 1947, and was advanced to assistant superintendent of terminals at that point on February 1, 1948, the post he held at the time of his new appointment.

EXECUTIVE

Charles A. Pinkerton, Jr., whose election as president of the Detroit & Mackinac, with headquarters at Tawas City, Mich., was reported in *Railway Age* of January 31, graduated from Michigan State College with an engineering degree in 1933. He subsequently served for several years in the sales departments of the Chrysler Corporation in Australia and the Todd Motors in New Zealand. In May, 1941, he was commissioned a

Charles A. Pinkerton, Jr.

second lieutenant in the army, and later served for 31 months in the Pacific area during World War II, advancing to the rank of lieutenant colonel. Upon his release from active military duty in 1945, he joined the D. & M. as assistant to president and general manager. He was advanced in June, 1946, to vice-president and general manager, which post he held at the time of his election as president, succeeding his father, the late Charles A. Pinkerton.

OBITUARY

John C. (Jack) Bradley, special representative to vice-president—operation, of the Chicago, Rock Island & Pacific, at Chicago, died in that city on April 30, following a heart attack.

Current Publications

PAMPHLETS

Highway Crossing Protection. Bulletin No. 177, 48 pages. Published by the General Railway Signal Company, Rochester 2, N. Y.

Well illustrated, this bulletin (superseding Bulletin No. 165) covers highway crossing protection equipment, such as crossing signals, relays, transformers and rectifiers, and outlines the efficiencies and economies of such protection.

A Short History of the St. Louis Southwestern Railway Lines, by Jacob E. Anderson. 29 pages. Copies may be obtained from the public relations department, St. Louis Southwestern Railway, 522 Cotton Belt Building, St. Louis 2, Mo.

This excellent short history of the Cotton Belt in the period of 1877 to 1947 is not only the corporate history of the railroad and its predecessor lines, but as well a thoroughly entertaining economic study of the Southwest in the last third of the 19th century.

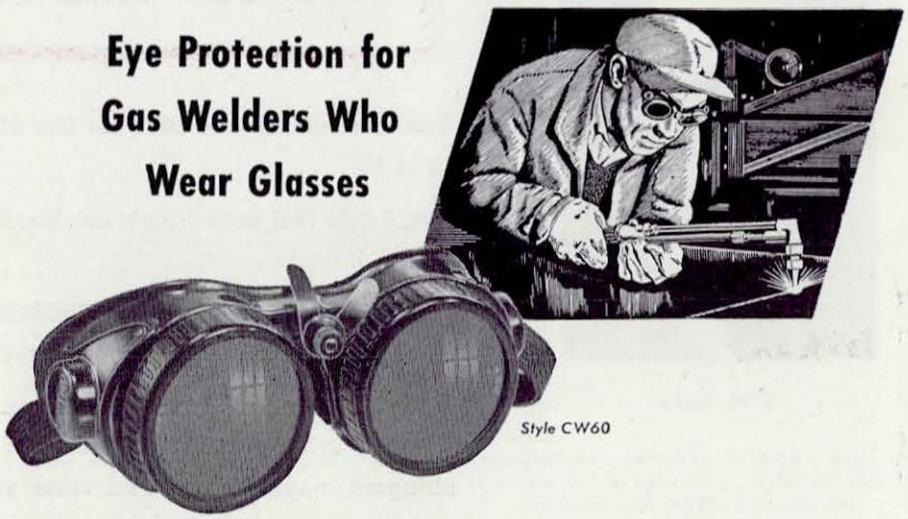
Surface Transportation Facilities in Italy, by Seymour T. R. Abt, Malcolm P. Hallam and Walter S. Abernathy. 4 pages. Issued by the Office of International Trade, United States Department of Commerce. Available from the Government Printing Office, Washington 25, D.C. Price, five cents.

This report discusses Italy's railway, shipping, highway and motor transport systems. The discussion on railways includes electrification, effects of the war, motive power, rolling stock and traffic.

Daniel Willard (1861-1942) — From Woodburners to Diesels!, by R. W. Brown, 32 pages. A Newcomen Address . . . delivered at the "1948 St. Louis Dinner" of the Newcomen Society of England, on April 7, 1948. Printed at the Princeton University Press, Princeton, N. J.

Mr. Brown has encompassed in a few pages, and in a colorful and human fashion, the biography of Daniel Willard from the time he was a boy in Vermont until the end of his long and varied railroad career. During this time he served, among others, the Soo Line, the Chicago, Burlington & Quincy and the Baltimore & Ohio. He also established a reputation for

Eye Protection for Gas Welders Who Wear Glasses



Style CW60

There's comfort for wearers of prescription glasses in WILLSON Cover-Alls* with the deep eye cups. And the adjustable leather bridge covers a danger spot and rests lightly on the nose. WILLSON-Weld* lenses are carefully matched for pairs; inspected for finest optical quality, and exceed Federal Specifications for filtering out ultraviolet and infrared rays.

Style DC50 Chip-Weld Goggles

*T.M. Reg. U.S. Pat. Off.

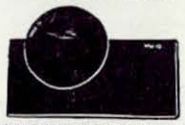
GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

DOUBLE WILLSON* PRODUCTS, INCORPORATED

Established 1870

241 WASHINGTON ST. • READING, PA.

For complete information on these products and their application, as well as many more eye and respiratory protective devices, get in touch with your nearest WILLSON distributor or write us direct.



WILLSON-WELD* Glass made in shades from 3 to 14 incl. for all kinds of gas and arc welding.

handling labor-management disputes, participated actively in railroad operation during the First World War, and found time to take an active part in civic affairs as well.

British Transport Directory of Officials. 40 pages. Published by the Railway Gazette, 33 Tothill st., Westminster, London, S.W.I, England. Price, one shilling.

For reference purposes the "Railway Gazette" has compiled a list of the members of the Ministry of Transport, the British Transport Commission, the Railway Executive, the London Transport Executive, the Road Transport Executive, the Docks and Inland Waterways Executive, and the Hotels Executive, together with their principal officers, so far as they have been announced.

Inland Waterway Transportation in America. 35 pages. Published by the American Waterways Operators, Inc., 1319 F St., N. W., Washington 4, D. C.

After defining inland waterway transportation, this pamphlet proceeds to discuss the various systems, their traffic, the progressiveness of inland waterway transportation, its benefits and advantages, and its place in the future. A double-page map of the commercially navigable inland waterways of the United States and several good illustrations of various types of traffic moving on the waterways are included.

On Reconnaissance for the Great Northern; Letters of C. F. B. Haskell, 1889-1891, edited by Daniel C. Haskell. 40 pages. Published by the New York Public Library, Fifth ave. and 42nd. st., New York 18.

Mr. Haskell was sent by James J. Hill in 1889 to the Flathead valley to examine the western approaches to the summit of the Rockies and discover a feasible route into the valley for the Great Northern's line to the Pacific. Later, he explored the region between Flathead lake and the Kootenai river. After his work in western Montana was completed, he assisted John F. Stevens in the explorations connected with the location of the railroad from Spokane to Puget Sound. In this pamphlet, in a series of letters to Mrs. Haskell, Mr. Haskell tells of these explorations. They are principally of interest as throwing sidelights on the more personal aspects of pioneer railroad exploration, its enjoyable aspects as well as its hardships; they also give interesting glimpses of the country passed through and of the people encountered, and shed a little light on land speculation.

The Economics of the Guaranteed Wage. Report of the Committee on Economic Policy, Chamber of Commerce of the United States. 27 pages. Published by the Chamber of Commerce of the United States, Washington 6, D. C. Price, single copies, 20 cents; lower rates for quantities.

The report is concerned primarily with the effect of an extension of the guaranteed wage on our economy as a whole, and the

* M H is MASS HANDLING — the systematic movement of the most units, in the shortest time, at the lowest cost.

You Need MH to Increase Output!

SEND FOR FREE COPY *Handling Materials—Illustrated,* shows how modern handling methods can save both time and money in your industry.

TOWMOTOR CORPORATION, DIV. 21 , 1226 E. 152nd ST., CLEVELAND 10, OHIO
Representatives in Principal Cities

DON'T BE A VICTIM OF OVER-EXPANSION — if productive output in your plant can be increased with Towmotor Mass Handling. Towmotor Fork Lift Trucks, Tractors and Accessories will provide an uninterrupted flow of materials that keeps production moving steadily and increases the productive potential of your present equipment and manpower. Take the modern approach to materials handling problems, find out now how Towmotors can increase production in any plant, large or small.

Fork Lift Trucks *and* Tractors

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

We haul planks and shingles, thanks

Among the jobs we like the best
Is hauling lumber from the West.
For houses, barns and scaffolding,
The things that make the hammers ring.
And all this wood, we'd like to say,
"Goes great the *great* Great Northern Way."

GREAT for Freight

GREAT NORTHERN RAILWAY

GEORGE F. HARDY
General Freight Traffic Manager
Great Northern Railway,
St. Paul 1, Minn.

theory that the guaranteed wage can help to mitigate business depression and mass unemployment. It concludes as follows: "The limited experience with this form of wage contract has led to inconclusive results. . . . Unfortunately these sporadic cases tell us little about the possible economic effects of a general guaranteed wage throughout our economic system. That such general adoption would not offer a strong weapon for the stabilization of the entire economy is the conclusion of economists who have made an independent investigation of the problem. This conclusion, standing alone, does not necessarily argue against more general voluntary adoption. What the effect on enterprise and expansion of much more widespread adoption might be is uncertain, but it appears probable that the risks of running a business would be raised by requiring the hiring of labor on some annual basis."

Railroad Equipment Trust Certificates. 23 pages. Published by Salomon Bros. & Hutzler, 60 Wall st., New York 5. Free.

This is a handy little booklet describing briefly, but concisely, what equipment trust certificates are, how and why they are issued, how such certificates fared during the recent railroad reorganizations, and their merit as an investment media.

Rail Transportation (Basic Information Sources), compiled by Marjorie V. Davis. 10 pages. Published by the Inquiry Reference Service, United States Department of Commerce, Washington 25, D. C. Free.

This list covers passenger and freight transportation by rail except the subjects of railroad equipment manufacture and repair, railroad engineering, and rail rates. It is divided into five categories—governmental publications, nongovernmental publications, directories, trade papers and associations. In each instance the name of the publisher, the place of publication and price is given.

TRADE PUBLICATIONS

Koppers Fire-Retardant Wood. 12 pages, printed in color. Published by the Wood Preserving Division, Koppers Company, Pittsburgh, Pa.

This booklet discusses the evolution of fire-retardant treatments and methods of treating wood to make it fire-retardant, and lists applications in which fire-retardant wood is of special value. The bulletin is also illustrated with pictures showing actual cases where fire, originating in inflammable materials, was held in check by the fire-retardant wood.

Carrier Telephone Systems. Bulletin No. 62A, 67 pages. Published by the Lenkurt Electric Company, 1139 County Road, San Carlos, Cal.

This well-illustrated bulletin covers frequency allocations for carrier telephone, descriptions of the terminals, repeaters, pilot regulators and auxiliary units which make up the system. Performance details are included, and a useful appendix provides engineering data on line attenuation and cable losses, together with information required in the planning of a carrier system.

Top-Icing with Snow-Ice. Book No. 2261, 16 pages, illustrated. Published by the Link-Belt Company, Chicago. Free.

This booklet contains information concerning the top-icing of perishable commodities in storage or in transit with snow-ice placed by the Link-Belt ice-slinger process. It illustrates, lists and describes all of the various models of ice-slingers now available and contains numerous views of actual installations.

Pullman on Dress Parade; a description of Pullman accommodations. Prepared by the Pullman Company. Available, free, from the Pullman Company, Chicago 54.

This 40-page booklet describes, by multi-colored cutaway pictures, the various types of new and improved Pullman accommodations available to railroad travelers. Wherever appropriate, the particular accommodation is separately illustrated to show how it is arranged for daytime and night occupancy.

ARTICLES IN PERIODICALS

New Show Goes on the Road. Steelways, May, 1948, pp. 30-31. Published by the American Iron & Steel Institute, 350 Fifth ave., New York 1.

This is a picture story of the rebuilding of a passenger coach, showing the car in various stages of reconstruction, beginning with the stripping of the car of everything but its steel shell, and ending with the completely rebuilt car. During its reconversion the coach traveled some five miles through the shops.

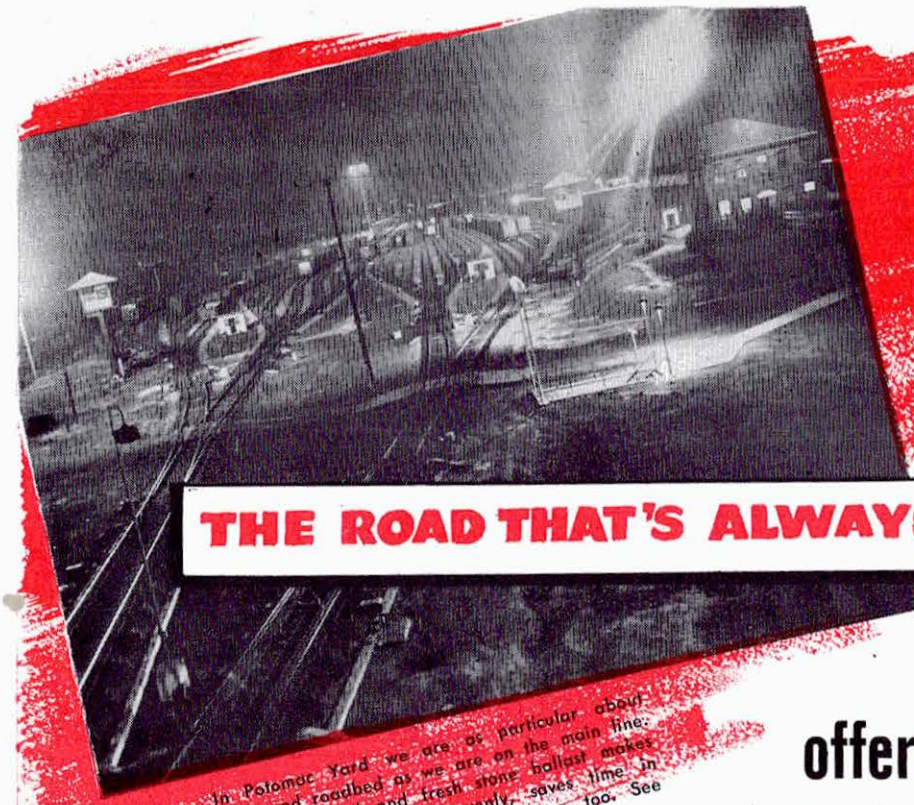
"Saga in High T," by Freeman Hubbard and Robert West Howard, in Steelways, March, 1948, pp. 1-5. Available free of charge from the American Iron & Steel Institute, 350 Fifth avenue, New York 1.

The authors herein trace the history of rail development, from the wooden "T" model designed in 1830 by Robert Stevens, president and chief engineer of the Camden & Amboy, to the modern steel and rail of today. A series of photographs illustrate the various operations involved in the production of today's rail.

BOOK

Proceedings of the Session of the Association of American Railroads, Mechanical Division, held August 8-9, 1946. 1142 pages, drawings, diagrams. Published by the Association of American Railroads, 59 E. Van Buren st., Chicago 5. Prive, $10.

No meetings of the Mechanical Division were held during 1942, 1943, 1944 and 1945. Therefore, this volume contains the proceedings of the meeting held at the Congress Hotel in Chicago on August 8 and 9, 1946, and also the recommendations, letter ballots and other transactions for the years 1942 to 1946 inclusive.



In Potomac Yard we are as particular about track and roadbed as we are on the main line. New heavy rail and fresh stone ballast makes cars roll smoothly and evenly, saves time in making up trains. Easier on ladings, too. See Railway Age, January 24 issue for details.

THE ROAD THAT'S ALWAYS ON ITS TOES

offers shippers a better kind of service

YOU hear it in railroad and shipping circles everywhere; "That R.F. & P. crowd is *alert;* they run a great railroad!" The fact is, it would be too bad if we didn't. Much that we haul is perishable; it must get to destination on schedule or damage claim results. So we constantly strive to make our 117 miles of double track connecting vital coastal routes North and South live up to its reputation as a model of well-run efficiency.

One of the ways R.F. & P. keeps your freight moving is shown above. Speedy hauling on the main line means nothing if freight waits in the yards, so Potomac Yard has been made the last word in equipment and fast dispatch.

And since transportation often makes or breaks a plant, splendid R.F. & P. service is a sound reason for choosing a site in the prosperous Chesapeake Bay region between Richmond and Washington. There are other good reasons; let us tell you about them.

RICHMOND, FREDERICKSBURG and POTOMAC RAILROAD

W. M. TAYLOR, TRAFFIC MANAGER

Richmond, Va.

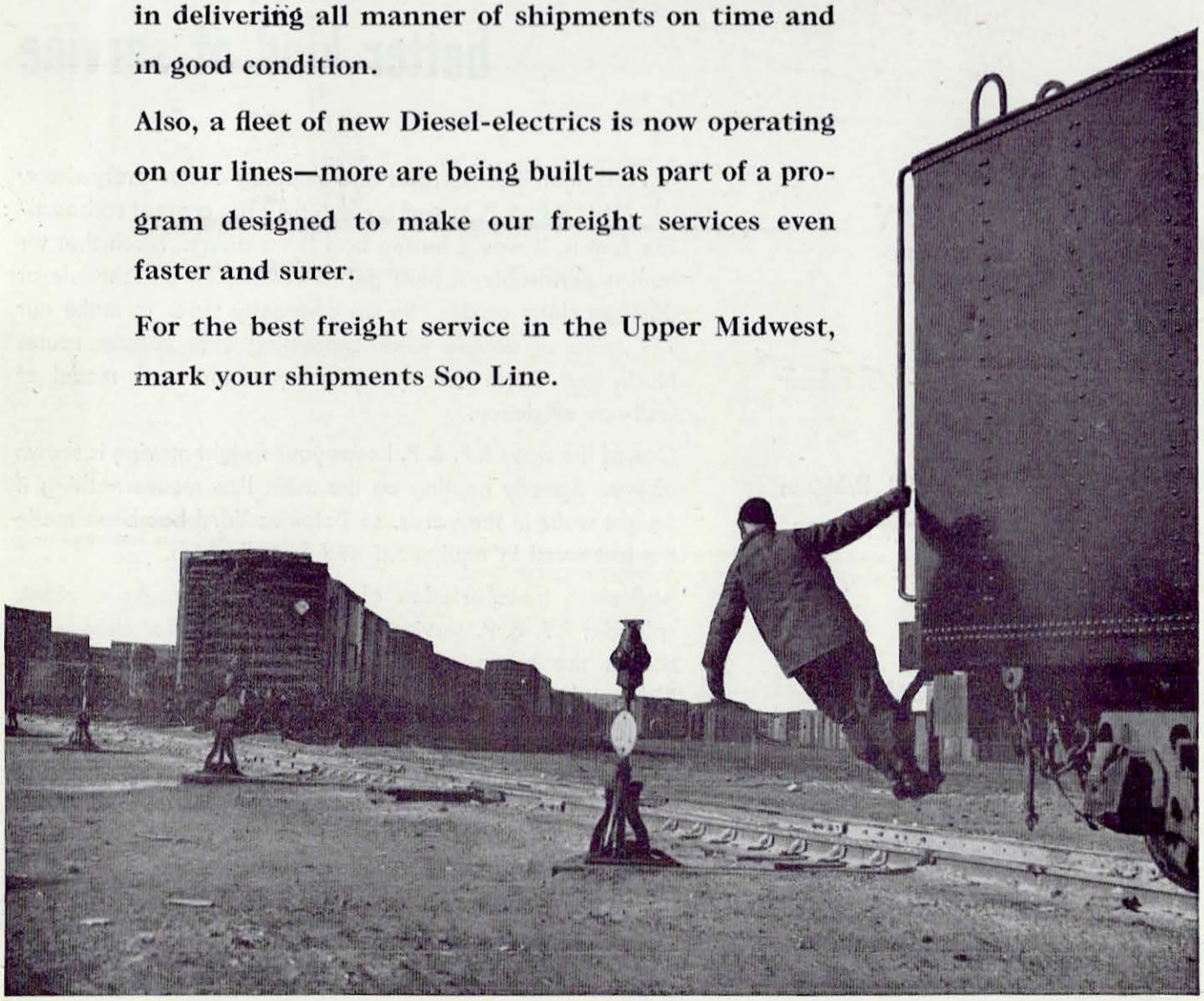
OLD and NEW means better

Hard to beat a combination of time-tested freight handling habits and speedy Diesel-electric power.

That's what you get when you ship Soo Line.
We offer you *experience* gained through years spent in delivering all manner of shipments on time and in good condition.

Also, a fleet of new Diesel-electrics is now operating on our lines—more are being built—as part of a program designed to make our freight services even faster and surer.

For the best freight service in the Upper Midwest, mark your shipments Soo Line.



service on the SOO

SOO LINE

Your *Working Partner* 7 Days a Week

Look to the Southeast for greater industrial Opportunity

ATLANTIC COAST LINE
VIRGINIA-NORTH CAROLINA-SOUTH CAROLINA-GEORGIA-FLORIDA-ALABAMA

In 1946 and 1947
517 NEW PLANTS
located along the road serving
AMERICA'S NEW INDUSTRIAL FRONTIER

Look to the Coast Line

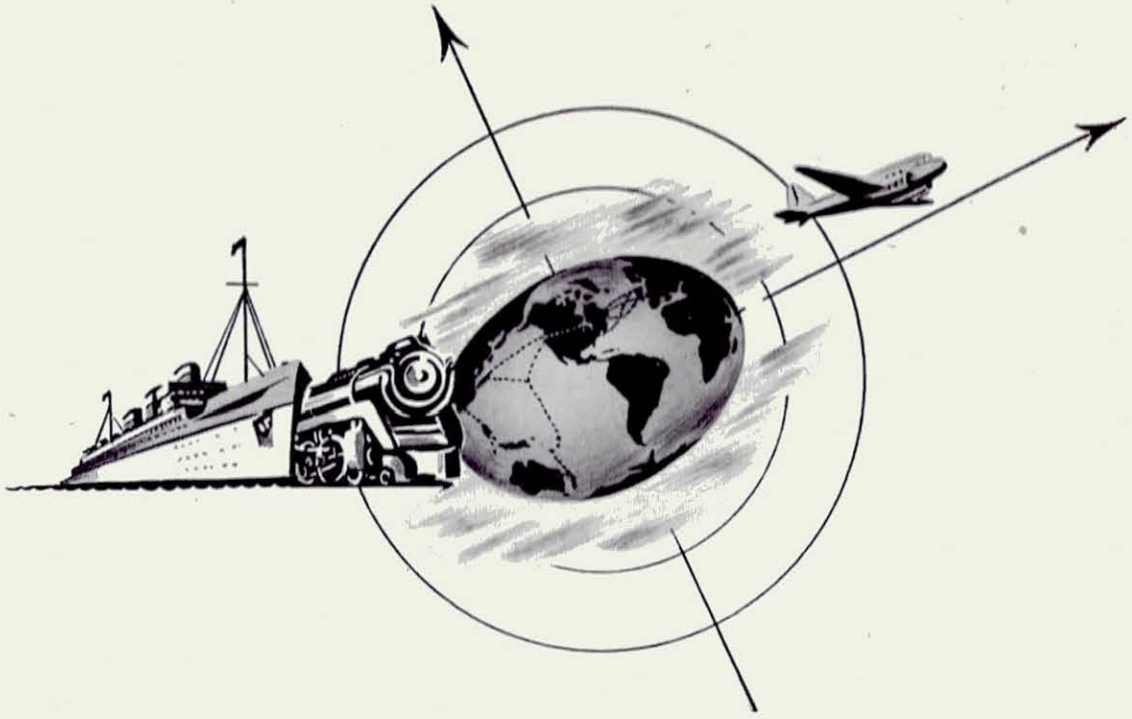
for— reliable data concerning

- industrial sites
- raw materials
- labor
- power
- climate
- water
- taxes
- transportation
- distribution facilities

R. P. JOBB
MANAGER DEVELOPMENT SERVICE

ATLANTIC
COAST LINE
RAILROAD

WILMINGTON, NORTH CAROLINA



For a World of Fast, Dependable, Efficient Freight Service ...Count on Canadian Pacific

Successful firms in the United States and in Canada know that profits depend upon the reliability of their freight shipments. That is why they count on Canadian Pacific...and Canadian Pacific's completely co-ordinated services that insure fast, dependable shipping facilities.

★ International and inter-state all-rail service...with differential rates from New York and New England to points in Western United States and Canada.

★ Canadian Pacific Great Lakes steamship service...connecting with rail freight service for important centers.

★ Trans-Atlantic, trans-Pacific and world-wide rapid freight service via Canadian Pacific steamship lines...to and from Alaska, Europe, Australia, New Zealand and the Orient.

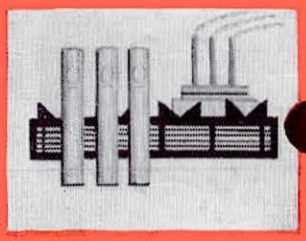
For a world of service—whether you are in the United States or Canada—count on Canadian Pacific to handle your local, trans-continental, world-wide freight shipments the modern way.

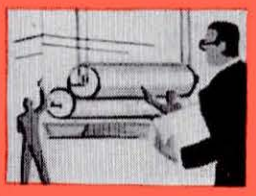
Canadian Pacific

NEW EQUIPMENT — FASTER SCHEDULES

speed freight in the expanding industrial south

SHIPPERS along the Norfolk Southern now get more for their transportation dollar than ever before. The recent acquisition of a fleet of Diesel-electric locomotives has speeded up the movement of all traffic with clock-work precision. This improved and expedited service means bigger profits for shippers, better prices and quicker turn-overs in business generally.





NORFOLK

VIRGINIA BEACH

CHARLOTTE

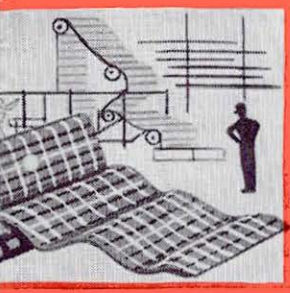
The Norfolk Southern Railway operates joint routes between the North and the South and between the Carolinas and the West.

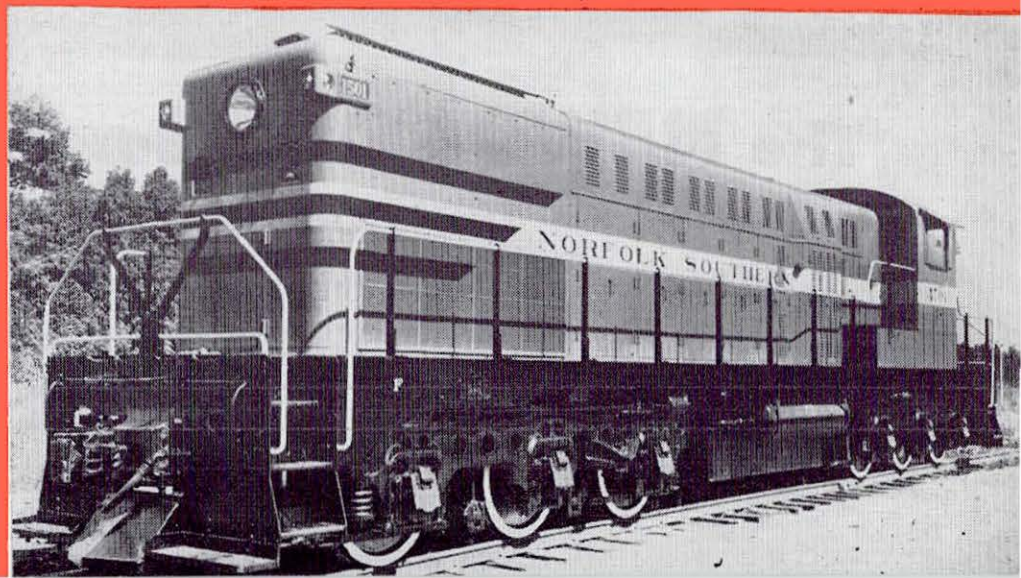
Principal connections with important carriers serving northern, western, and southern territories.

Prompt, efficient, and careful transportation assured on all traffic.

Norfolk Southern Railway

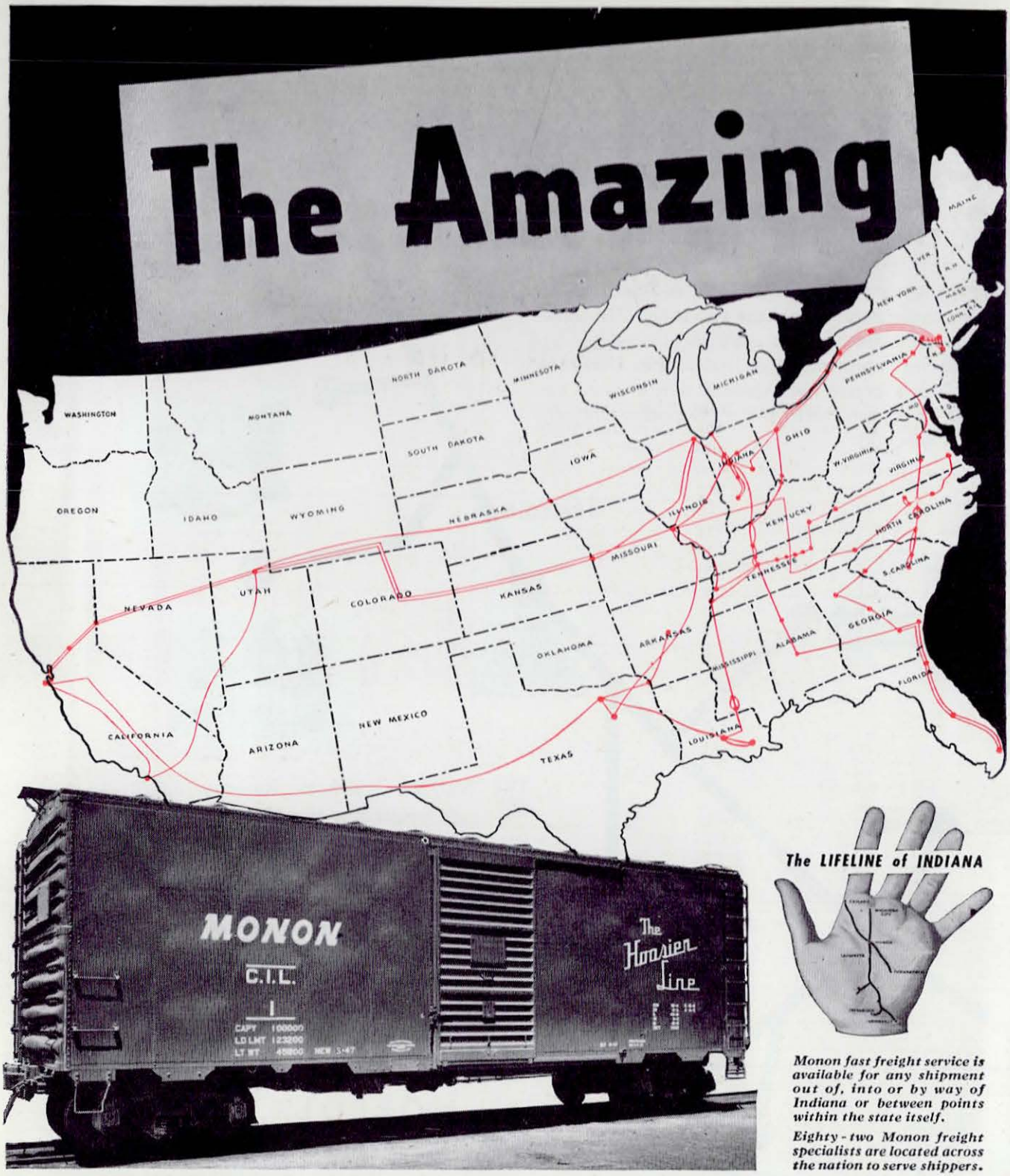
NORFOLK, VA.





Typical of real progress on the Norfolk Southern Railway Company, as a means of improving freight schedules and general operation, is the installation of eighteen Diesel-electric locomotives.

The Amazing



Monon fast freight service is available for any shipment out of, into or by way of Indiana or between points within the state itself.

Eighty-two Monon freight specialists are located across the nation to serve shippers.

The NEW IDEA in Box Car Numbers

Initiated by MONON

"C. I. & L." Box Car No. 1 is a symbol not alone of a new style in car numbers but of the progressive spirit that characterizes all of Monon's operations and services.

Itinerary . . .

OF MONON'S NEW BOX CAR No. 1

A tribute to its first anniversary

Each unneeded digit eliminated from a car number reduces opportunities for error. On the chance that many shippers have never seen the crazy-quilt pattern of a freight car's travels, during which its numbers may be used thousands of times, we are showing the day-by-day itinerary of Box Car No. 1 during its first year. This is the first car to carry the Monon's new simplified system of numbering. On these trips the Railroads have already saved thousands of lead pencil strokes, typewriter impressions, teletype impulses and spoken numerals. Here is the amazing itinerary, with cargoes carried:—

May 7-47	Michigan City, Ind.	Monon	New
" 7-8-9	French Lick, Ind.	Monon	On display
" 16	Bloomington, Ind.	Monon	On display
June 9	LaFayette, Ind.	Monon	On display
" 13	Crawfordsville, Ind.	Monon	First load
" 16	Crawfordsville, Ind.	Monon	Merchandise
" 17–18	Louisville, Ky.	Monon	Freight house
" 20	Louisville, Ky.	L. & N.	Merchandise
" 22	Nashville, Tenn.	L. & N.	Merchandise
" 22	Birmingham, Ala.	L. & N.	Merchandise
" 22	Montgomery, Ala.	L. & N.	Merchandise
" 27	Montgomery, Ala.	S.A.L.	Merchandise
" 27	Jacksonville, Fla.	S.A.L.	Merchandise
July 1	West Lake Wales, Fla.	S.A.L.	
" 2	Miami, Fla.	S.A.L.	
" 4	West Lake Wales, Fla.	S.A.L.	
" 5	Savannah, Ga.	S.A.L.	
" 10	Vidalia, Ga.	S.A.L.	
" 11	Vidalia, Ga.	M.D. & S.	
" 11	Macon, Ga.	C. of Ga.	
" 12	Atlanta, Ga.	S.A.L.	
" 15	Abbeyville, S. C.	S.A.L.	
" 16	Hamlet, N. C.	S.A.L.	
" 20	Cayce, S. C.	S.A.L.	
" 23	Camden, S. C.	S.A.L.	
" 24	Hamlet, N. C.	S.A.L.	
" 26	Apex, N. C.	S.A.L.	
" 30	Sanford, N. C.	S.A.L.	
Aug. 7	Sanford, N. C.	S.A.L.	
" 8	Richmond, Va.	S.A.L.	
" 9	Richmond, Va.	R. F. & P.	
" 9	Alexandria, Va.	P.R.R.	
" 11	Wilkesbarre, Pa.	D. & H.	
" 12	Jermyn Transf., Pa.	N.Y.O. & W.	
" 13	Carbondale, Pa.	N.Y.O. & W.	
" 13	Cadosia, N. Y.	N.Y.O. & W.	
" 16	Wurtsboro, N. Y.	N.Y.O. & W.	
" 22	Cayuga, N. Y.	D.L. & W.	
" 24	Buffalo, N. Y.	N.K.P.	Empty
" 28	Northeast, Pa.	N.K.P.	Tomato juice
" 30	Lima, Ohio	B. & O.	Tomato juice
Sept. 2	Cincinnati, Ohio	L. & N.	Tomato juice
" 3	Strawberry, Ky.	L. & N.	Tomato juice
" 3	Bowling Green, Ky.	L. & N.	Tomato juice
" 4	Gallatin, Tenn.	L. & N.	Tomato juice
" 10	Nashville, Tenn.	L. & N.	Tomato juice
" 11	Nashville, Tenn.	T.C.	Made empty
" 15	Cookeville, Tenn.	T.C.	
" 16	Algood, Tenn.	T.C.	
" 20	Monterey, Tenn.	T.C.	
" 22	Harriman, Tenn.	Sou	
Sept. 25	Knoxville, Tenn.	L. & N.	Tobacco
" 26	Corbin, Ky.	L. & N.	Tobacco
" 28	Norton, Va.	N. & W.	Tobacco
" 30	Norfolk, Va.	Norfolk & Ptsmouth Belt.	To army base
Oct. 5	Norfolk, Va.	N.P.B.	From army base
" 6	Norfolk, Va.	N.P.B.	Tobacco
" 8	Norfolk, Va.	N.P.B.	Made empty
" 8	Norfolk, Va.	A.C.L.	
" 16	Wilson, N. C.	Norfolk Sou	Leaf tobacco
" 16	Raleigh, N. C.	Norfolk Sou	
" 17	Duncan, N. C.	Norfolk Sou	
" 17	Durham, N. C.	Norfolk Sou	Unloaded
" 29	Durham, N. C.	Norfolk Sou	Cigarettes
" 30	Charlotte, N. C.	Sou	Cigarettes
Nov. 3	St. Louis, Mo.	T.R.R.A.	Cigarettes
" 4	St. Louis, Mo.	M.K.T.	Cigarettes
" 5	Kansas City Mo.	U.P.	Cigarettes
" 8	Ogden, Utah	Sou Pac	Cigarettes
" 9	Sparks, Nevada	Sou Pac	Cigarettes
" 10	Roseville, Calif.	Sou Pac	Cigarettes
" 11	Oakland, Calif.	Sou Pac	Unloaded
" 19	Port Costa, Calif.	Sou Pac	
" 25	Roseville, Calif.	Sou Pac	
" 26	Sparks, Nev.	Sou Pac	
" 28	Ogden, Utah	U.P.	
Dec. 3	Kansas City, Mo.	G.M. & O.	
" 5	Chicago, Ill.	B. & O.C.T.	
" 16	Chicago, Ill.	B. & O.C.T.	Empty
" 17	Chicago, Ill.	B. & O.C.T.	
" 19	Chicago, Ill.	Monon	Syrup
" 19	Indianapolis, Ind.	Monon	Syrup
" 24	Indianapolis, Ind.	I.U.R.R.	Syrup
" 26	Indianapolis, Ind.	N.K.P.	Auto parts
" 26	Lima, Ohio	Erie	Auto parts
" 30	Bloomfield, N. J.	Erie	Auto parts
Jan. 6-48	Bloomfield, N. J.	Erie	Drugs
" 9	Lima, Ohio	Erie	Drugs
" 10	Frankfort, Ind.	N.K.P.	Drugs
" 10	St. Louis, Mo.	T.R.R.A.	Drugs
" 11	St. Louis, Mo.	Cotton Belt	Drugs
" 13	Corsicana, Tex.	Sou Pac	Drugs
" 23	San Francisco	Sou Pac	Drugs
Feb. 3	San Francisco	Sou Pac	Coffee
" 7	Los Angeles	A.T. & S.F.	Coffee
" 14	Los Angeles	A.T. & S.F.	Drums
" 14	Los Angeles Harbor	Harbor Belt Line	Drums
" 20	Los Angeles	U.P.	Coconut
" 26	Council Bluffs	C.M.St.P. & P.	Coconut
March 4	Chicago Division St.	C.M.St.P. & P.	Coconut
" 6	Chicago (Dunning)	C.M.St.P. & P.	Coconut
" 12	Chicago (Cragin)	C.M.St.P. & P.	Soya Meal
" 13	Norpaul	I.H.B.	Soya Meal
" 16	Riverdale	I.H.B.	Soya Meal
" 20	Riverdale	I.H.B.	Barley Chaff
" 20	Argo (via St. Louis)	G.M. & O.	Barley Chaff
" 23	Jackson, Tenn.	N.C. & St.L.	Barley Chaff
" 24	Nashville	N.C. & St.L.	Barley Chaff
" 30	Nashville	N.C. & St.L.	Feed
April 1	Memphis	I.C.	Feed
" 3	Magnolia, Miss.	I.C.	Feed
" 6	McComb, Miss.	I.C.	Empty
" 7	Reserve, La.	I.C.	Empty
" 9	Baton Rouge	I.C.	Fuel
" 10	New Orleans	I.C.	Fuel
" 10	New Orleans	T. & P.	Fuel
" 16	New Orleans	T. & P.	Coffee
" 17	Dallas, Tex.	T. & P.	Coffee
" 19	Texarkana, Ark.	Mo Pac	Empty
" 20	Little Rock	Mo Pac	Empty
" 26	Bauxite, Ark.	B & N	Alumina
" 26	Bauxite Jct., Ark.	Mo Pac	Alumina
" 28	Kansas City, Kans.	U. P.	Alumina
May 4	Troutdale, Oregon	U. P.	Alumina

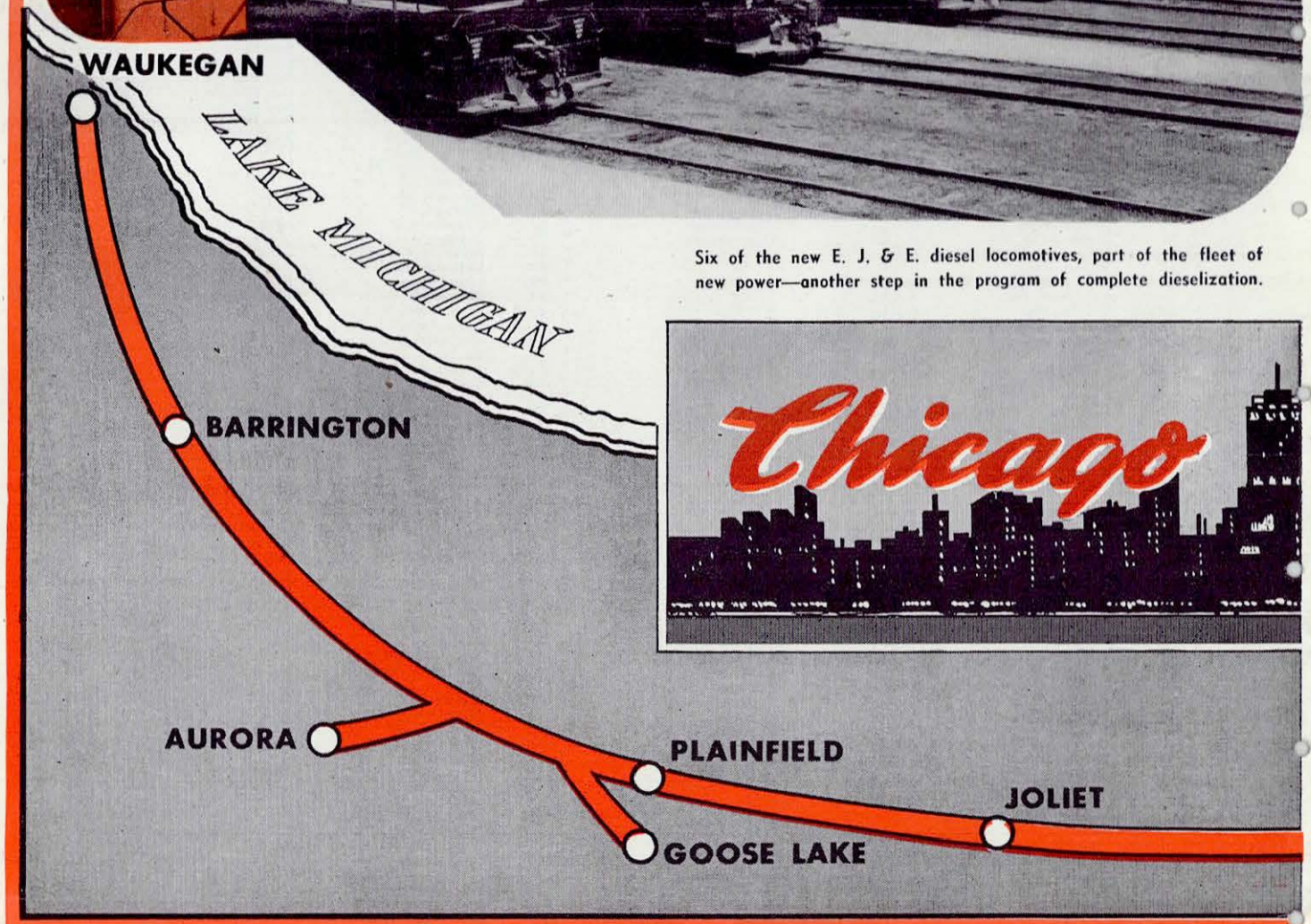
MONON

THE HOOSIER LINE

CHICAGO, INDIANAPOLIS and LOUISVILLE RAILWAY COMPANY

POWER

Six of the new E. J. & E. diesel locomotives, part of the fleet of new power—another step in the program of complete dieselization.



INTERCHANGE WITH ALL RAIL

and More POWER

is the basis of *all around* GOOD SERVICE

This year the Elgin, Joliet and Eastern Railway is putting into service forty-four new Diesel locomotives, 25 of which will be giant road engines. This force of modern power units provides tireless muscles for the big job of moving the huge freight tonnage of originating, terminating and overhead traffic.

To augment this locomotive equipment, the E. J. & E. is also placing into service one thousand new cars, of which 500 are box cars, 400 ordinary gondolas and 100 65-foot gondolas.

The main line will be increased in safety and strength by a substantial rail-laying program. In 1948, 14.89 miles of continuous welded rail will be added to the 26.17 miles installed in recent years.

The E. J. & E. now has in service the longest continuous welded rail sections (12,782 feet and 11,440 feet) in the United States.

In addition, there will be installed in East Joliet Yard a complete two-way communication system, to increase the efficiency of yard operations. This system will enable yardmasters to keep in constant touch with switch crews, through two control towers and two-way speakers at regular intervals along lead tracks. Arrangements have been made to install a complete pneumatic tube system between offices and control towers to expedite the handling of waybills, wheel reports, consists, and mail.

These are highlights of an unchanging policy of progress maintained to provide shippers and receivers of freight routed via the E. J. & E. with balanced, all-year good service.

ELGIN, JOLIET AND EASTERN RAILWAY

208 South LaSalle Street, Chicago 4, Illinois

SERVING THE GREAT CHICAGO METROPOLITAN AREA

ROADS ENTERING CHICAGO

new frontiers for modern pioneers along the MAINE line...

There is unlimited opportunity for the location and development of industrial enterprise in Northern Maine. Ideal sites located adjacent to or within practical distances of abundant power, transportation facilities and labor markets abound in this vast area.

Modern transportation provided by the Bangor and Aroostook Railroad brings world markets within easy reach. Dependable, economical transportation adequate to the needs of any enterprise are assured.

Northern MAINE Offers:

FARMLANDS... The finest soil in the United States for the cultivation of potatoes. The soil and climate are ideally suited to the cultivation of a variety of other produce as well. Vegetation and climate lend themselves also to the successful raising of cattle on any scale.

HARDWOODS Northern Maine embraces the largest undeveloped stands of yellow birch, white birch, maple and beech in the nation. These hardwoods lend themselves to the development of numerous industrial enterprises.

MINERALS Highest quality slate pyrite ore, iron manganese ore, lime rock, marl, traprock and granite abound in this area. Quality, quantity, and accessibility are all favorable factors to anyone interested in these minerals for industrial purposes.

RECREATIONAL FACILITIES Vast tracts of wilderness comprising numerous lakes, streams, mountain peaks and rolling ranges offer unusual opportunities for development of recreational projects. Its forests shelter abundant wildlife—its lakes and streams are far famed for the size and gameness of the fish they shelter. These attractions combine to provide an ideal opportunity for anyone interested in sporting or recreation as a business enterprise.

BANGOR and AROOSTOOK RAILROAD

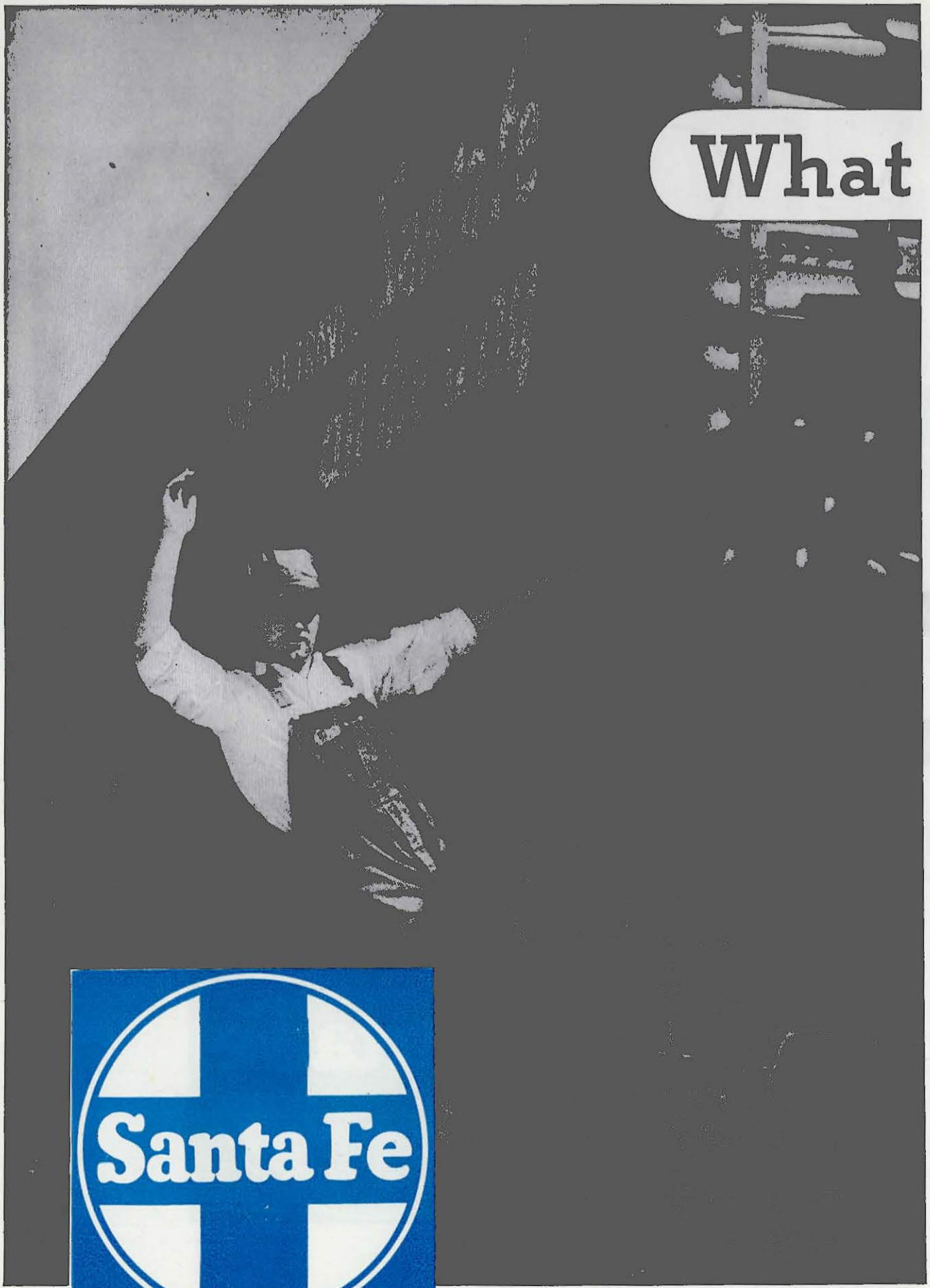
General Offices: BANGOR, MAINE

BANGOR AND AROOSTOOK RAILROAD *Serving* NORTHERN MAINE

Inquiries Are Invited . . . Address Communications to

W. B. Hill *Freight Traffic Manager* or J. Fred Smith *Passenger Traffic Manager*

Ship
Santa Fe
all the way
Santa Fe



Santa Fe

we mean when we say

Santa Fe *all the way*

Santa Fe is the only railroad operated under one management all the way between Chicago and California, and between Chicago and Phoenix.

In addition, Santa Fe provides one-railroad-all-the-way service between Chicago and the Texas Gulf Coast, as well as between Denver and the Texas Gulf Coast.

Here's what these distinctive "Santa Fe all the way" routings mean for shippers:

Controlled Shipments

To you, as a shipper, Santa Fe all the way means a *controlled shipment* of your freight at all times. We know when it left its point of origin, when it is due to arrive at its destination, and through fast and accurate car reporting and our private telephone system (world's largest), we can tell you where it is at any time en route.

Special service instructions—icing or heating for produce, feeding and watering for animals, or other special attention for your shipment—precede each train.

Undivided Responsibility

Your shipments get from the Santa Fe *undivided responsibility* which means better "on-time" service, fewer delays, no "buck passing" to another carrier for failure to follow handling instructions.

When you ship Santa Fe all the way, you run less chance of being late. Santa Fe feels an obligation to deliver your shipments as nearly on time as possible.

Continuous Improvements

You get the benefits of continuous improvements in freight service. We are operating a number of through freight trains on regularly scheduled, fast runs, and in as many as four sections, when the traffic warrants.

We are using radio to make yard operations more efficient. New types of freight and refrigerator cars, rolling on roadbed groomed by our ingenious new ballast-cleaning machine, will give your shipments an easier ride.

Route your next shipment—or make your next trip—via "Santa Fe all the way." That is the best possible way to judge the results for yourself.

For details on how we can serve you, see your Santa Fe representative.

T. L. BOTHWELL, General Freight Traffic Manager
Santa Fe System Lines, Chicago 4

SANTA FE SYSTEM LINES . . . Serving the West and Southwest

Doin' it with Diesels!

DIESEL CAPITAL OF THE WORLD — *Barstow, California, is one of the main Diesel shops on the Santa Fe. This line-up includes both the powerful 5,400 H. P. and 6,000 H. P. giants ready for freight and passenger service.*

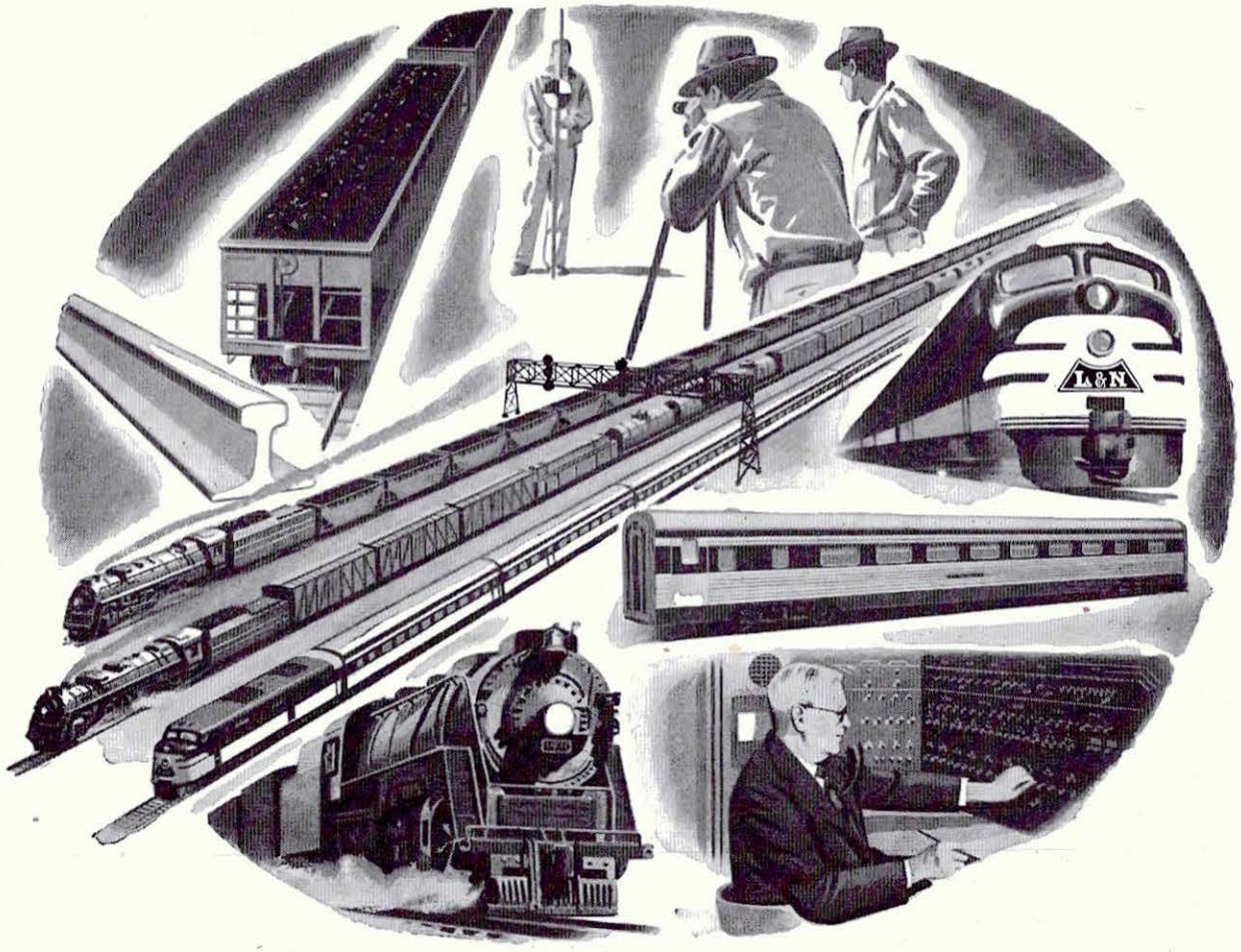
The Santa Fe fleet of Diesel locomotives is the largest in the world.

In numbers, that means 552 units, with 717,760 horsepower. On order, with delivery expected in 1948 and early in 1949, are 100 more units, which will bring the grand total to 864,760 horsepower.

This great array of power means ability to move freight in greater tonnage with better "on-time" performance, easier starts and stops, smoother handling. It is a big part of Santa Fe's ability to carry the load—and a big reason for you to ship "Santa Fe—all the way."

Santa Fe

Santa Fe—*all the way*



$49,000,000 MORE *for a* GREATER L&N

Looking forward after nearly 100 years of constructive development, starting in 1850, the Louisville & Nashville Railroad continues to plan for Tomorrow.

Since the War's end it has spent over $40,000,000 for improvements and modernized service.

It now has outstanding appropriations calling for $49,000,000 more! These include:

Heavier rail
Centralized traffic control for improved train operation
Additional lines into new coal fields
62 freight, passenger and switch locomotives
22 streamlined passenger cars
8,500 new coal cars (2,300 already delivered)

Thus, as Private Builder and Public Servant, the L&N will continue to give the best possible service to the shipping and traveling public and to champion a greater industrial South through true American Free Enterprise.

LOUISVILLE & NASHVILLE RAILROAD

THE OLD RELIABLE · YESTERDAY · TODAY · TOMORROW

We're Pulling for Ship

THE COTTON BELT CLICKS

Splendid equipment, augmented by a fleet of 5400-hp. Diesel-electric road engines and 1000-hp. Diesel-electric switchers, well-ballasted roadbed, a large percentage of its main line laid with 112-lb. rails under Centralized Traffic Control, and the recently installed teletype system to expedite the tracing of cars in transit, are some of the high spots which make Cotton Belt service click with shippers.

The Cotton Belt was one of the first railroads to establish fast merchandise freight when in the early 30's it placed in service the famous "*Blue Streak*." This highly regarded train gives 2nd morning delivery to most of Texas. Modern terminal facilities keep speeding shipments through; for example, the Cotton Belt's interchange with the Southern Pacific at Corsicana is regarded as the world's fastest.

COTTON BELT SERVICE MEETS MODERN BUSINESS DEMANDS

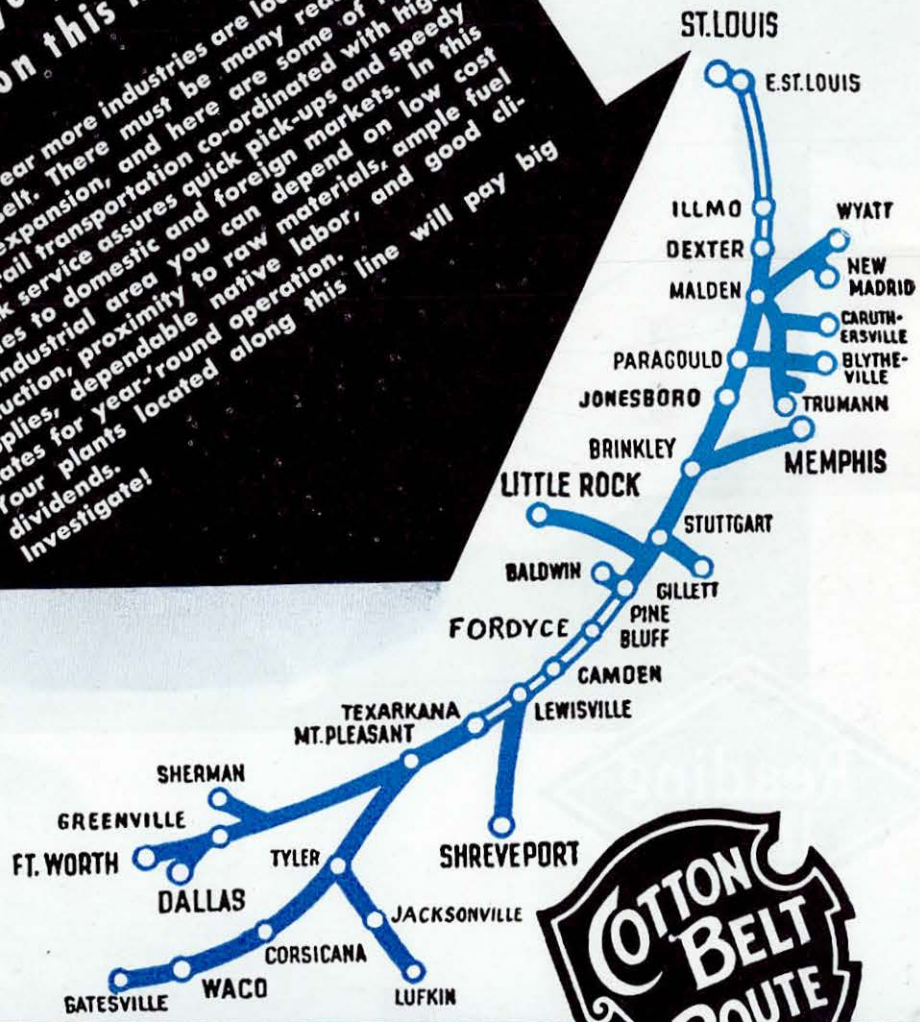
Cotton Belt Serves

pers All Ways-Always

Reasons Why-

It will pay you to locate your plant on this Main Line.

Year after year more industries are locating along the Cotton Belt. There must be many reasons for this rapid expansion, and here are some of them. Excellent rail transportation co-ordinated with highway truck service assures quick pick-ups and speedy deliveries to domestic and foreign markets. In this vast industrial area you can depend on low cost production, proximity to raw materials, ample fuel supplies, dependable native labor, and good climates for year-'round operation. Your plants located along this line will pay big dividends. Investigate!



COTTON BELT ROUTE

The Great Southwest

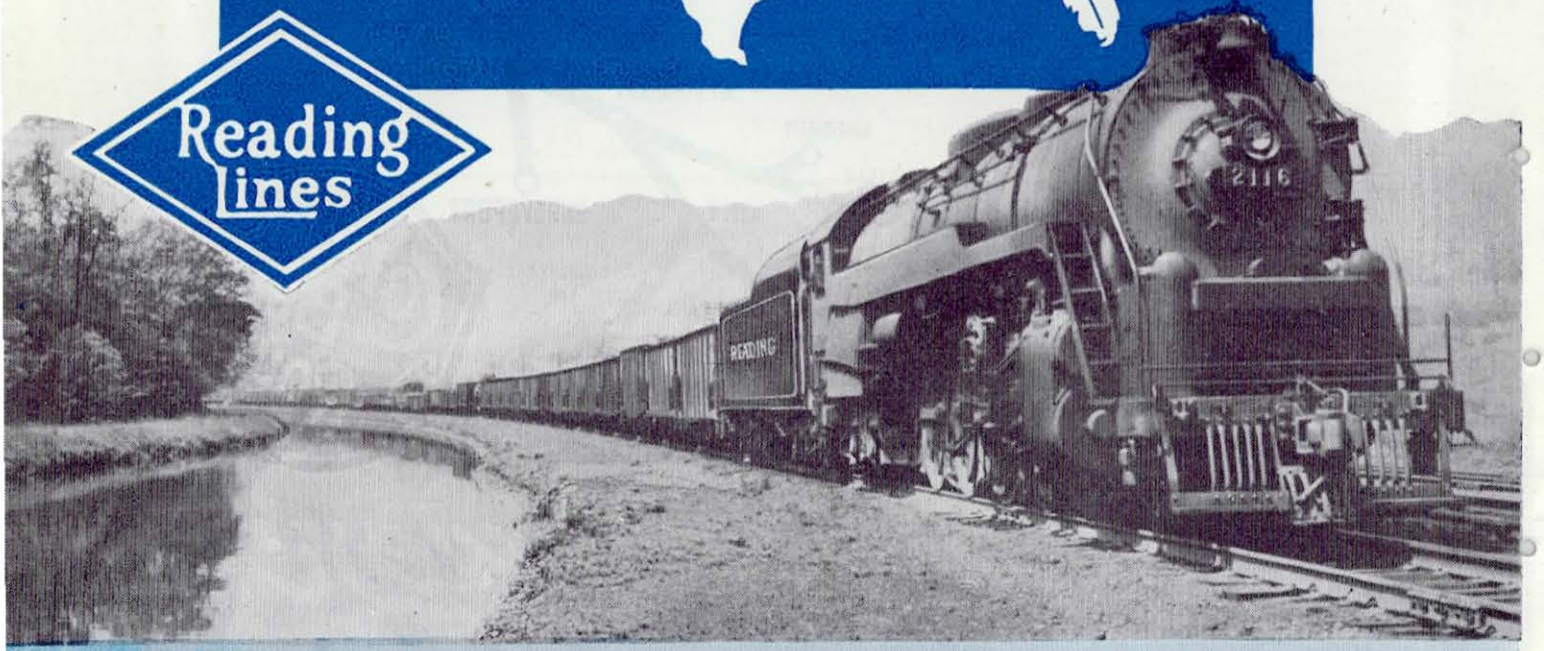
Fast Freight

Top — Diesel-electric powered freight trains speed schedules and give fast, sure service to shippers.

Middle — Reading's Traffic Development Program is nationwide. Representatives from off-line offices cooperate with industry in solving shipping problems.

Lower — Reading's modernization of motive power has resulted in increased efficiency — permitting the handling of more traffic.

Reading lines



READING RAI

Schedules Feature READING SERVICE

THE READING serves a highly industrialized area with fast and frequent freight service. It carries a heavy local tonnage efficiently; but more important is the fact that the greater portion of its traffic is handled jointly with other railroads in nation-wide service.

In the post-war era, The Reading has spent millions of dollars to bring its physical properties up to highest operating efficiency. Great strides have been made in long-range programs to modernize its equipment and to improve roadway and other facilities. Some of the important betterments in the post-war era, 1946 and 1947, are:

LOCOMOTIVES

22 new steam freight locomotives completed.
25 new 1000 H.P. Diesel switching locomotives purchased.
6 new 6000 H.P. Diesel freight locomotives on order.
35 freight and passenger locomotives modernized.

FREIGHT CARS

2000 all-steel box cars and 100 all-steel bulk cement cars completed.
1000 all-steel box cars, 1000 all-steel 50-ton hopper cars and 25 all-steel caboose cars on order.
8449 freight cars equipped with "AB" high speed brakes.

PASSENGER TRAIN CARS

12 new passenger cars and 8 new Multiple Unit passenger cars on order.
8 Suburban type passenger cars to be converted into M.U. trailer cars.
43 passenger cars to be modernized.

FLOATING EQUIPMENT

4 all-steel car floats of 14 car capacity acquired.
3 all-steel lighters on order.

WORK EQUIPMENT

1 new 250-ton capacity wrecking crane on order.

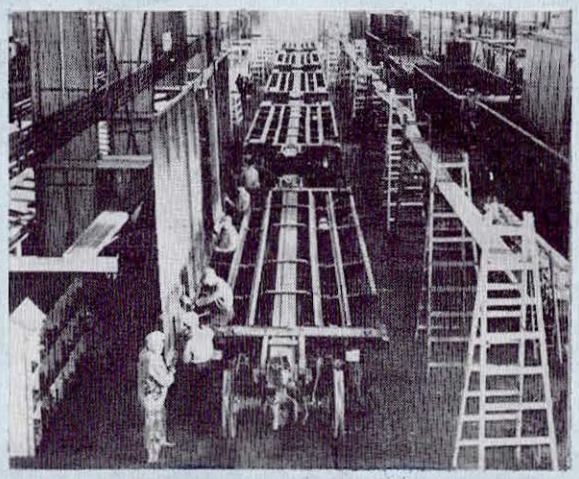
ROADWAY IMPROVEMENTS INCLUDE:

703,000 new treated ties and 26,000 tons of new rail laid.
Color light signals extended to 295 track miles.
33 interlocking plants modernized.
New bridge over Schuylkill River at Reading and a number of other bridges strengthened.

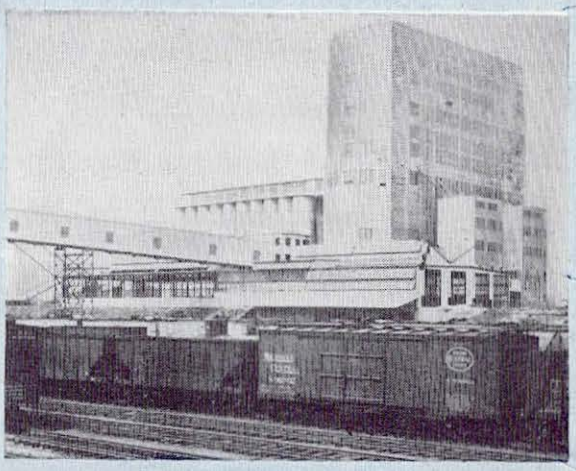
The Reading is America's largest carrier of anthracite and hauls an almost equivalent amount of bituminous. At Port Richmond, Philadelphia and Port Reading (New York Harbor), Reading service offers unsurpassed facilities for shipments to and from every corner of the world.

Look into the Reading territory if you're planning expansion. Here are vast resources and markets, and unsurpassed transportation facilities. In 1946 and 1947, more than 150 new industries—of all kinds—have located their plants on the Reading. The Industrial Development Department will assist you in getting the right site.

Laying 131-lb. rail, part of Reading program to maintain its high standard of service.



Assembly-line methods employed to build all-steel freight cars in the Reading Shops.



Grain Elevator — capacity 2,500,000 bushels — at Port Richmond — one of the nation's largest tidewater terminals.

LWAY SYSTEM

WE'RE READY FOR ANYTHING!

Our specialty is diversification! In fact, no one product or raw material accounted for as much as 7% of our total freight revenue in 1947!

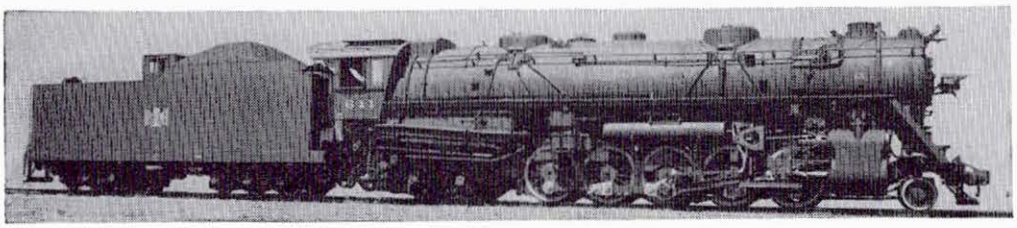
Year after year experience in handling the shipments of thousands of *different* businesses and industries makes the words "Specify Boston and Maine" important to the protection and prompt delivery of *your* products.

Specify **BOSTON and MAINE**

BOSTON and MAINE
RAILROAD
"MINUTE MAN SERVICE"

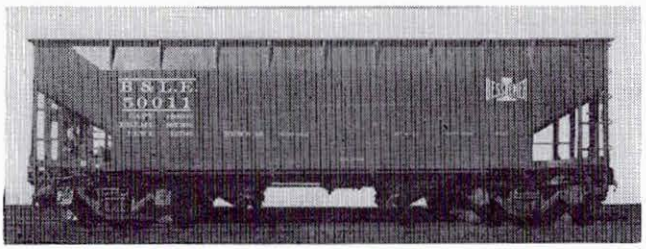
WITH A LOCATION ON THE BESSEMER

ADEQUATE POWER



47% TWELVE YEARS OLD OR LESS

AND AN ADEQUATE CAR SUPPLY



71% TWELVE YEARS OLD OR LESS

PLUS PROMPT DELIVERIES

ASSURE YOU OF THE SERVICE NEEDED TO MEET YOUR MOST EXACTING

TRANSPORTATION REQUIREMENTS

BESSEMER and LAKE ERIE RAILROAD COMPANY

"Freight Progress" on the C&O

The C & O hauled more freight in 1947 than ever before. During that year, over 39,000,000,000 ton miles of freight traffic were handled, an increase of twenty-five per cent over the preceding year.

Coal traffic alone hit a new high. Throughout the year, C&O handled 93 million tons of coal. Some 74 million tons came from the 300-odd mines located along the line, and the other 19 million from connecting lines.

Records were also made in daily tonnages loaded, as well as in annual totals. In one day, C&O loaded 5,911 cars, equal to a coal train 45 miles long. This daily record has already been broken in 1948.

Merchandise freight traffic went up, too. More than 9,000,000,000 ton miles of freight, other than coke and coal, represented a nine per cent increase over the year before.

Records like these aren't chalked up by accident. They stem from efficient operation . . . fast handling . . . fast movement . . . fastest possible return of "empties," and from the new, fast "Expeditor" freight service between Chicago and Newport News, inaugurated in 1947.

That's "Freight Progress" on the C&O.

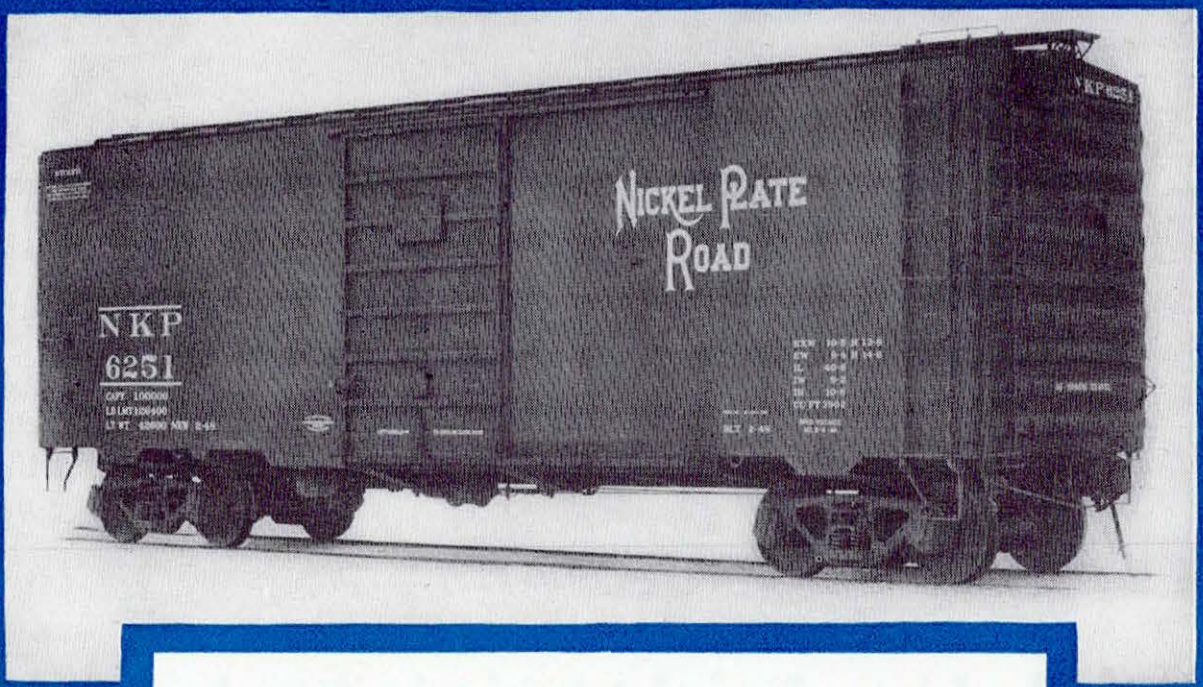
This coal-burning steam turbine electric locomotive was delivered in 1947. Another forward step by the progressive C & O.

Chesapeake & Ohio Railway

TERMINAL TOWER CLEVELAND 1, OHIO

C AND O FOR PROGRESS

NICKEL PLATE ROAD



THE program to make possible still better service on the Nickel Plate was actively continued throughout the year 1947, in spite of an acute shortage of critical materials. This program included elimination of curves and grades; replacement or reconstruction of bridges; new and heavier rail; completion of 50 miles of centralized traffic control, with the construction of 82 additional miles undertaken; new shops; improved signals; new cars acquired and many more reconditioned in our own shops; and more new diesels. This broad program will result in better service for the shipping public.

NICKEL PLATE ROAD

. . . Mark of
PROGRESS
in Railroading

She holds a freight train in her hands!

AT her fingertips, this young lady has a complete record of an Erie freight train.

The teletype tape she holds tells the car number, contents, consignee and destination of every car in the train. Placed in an automatic transmitter, it flashes this detailed information to other Erie offices and freight yards.

Because of this fast, modern method of communication, an Erie representative can tell a shipper promptly where his car is, and when it is due at destination.

The Erie's teletype network has constantly been expanded, and now includes cities far beyond the limits of the railroad. At present a total of 5,246 miles is covered by this system, and plans are in progress for further expansion.

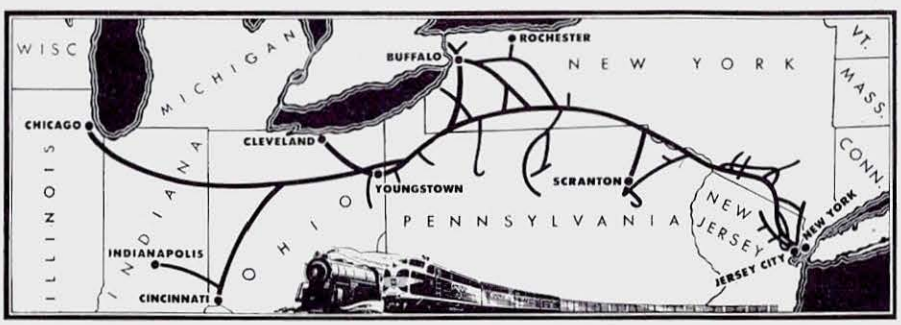
This network plays an important part in expediting service to customers. It is typical of the Erie's continuing program of improvement through *progressive railroading.*

Write today for your copy of the Q. A. Car Locater Service Folder

ERIE RAILROAD • 1305 MIDLAND BLDG. • *Cleveland, Ohio*

Erie Railroad

Serving the Heart of Industrial America



America's Largest Railway System...

CANADIAN NATIONAL RAILWAYS

GRAND TRUNK RAILWAY SYSTEM

CENTRAL VERMONT RAILWAY

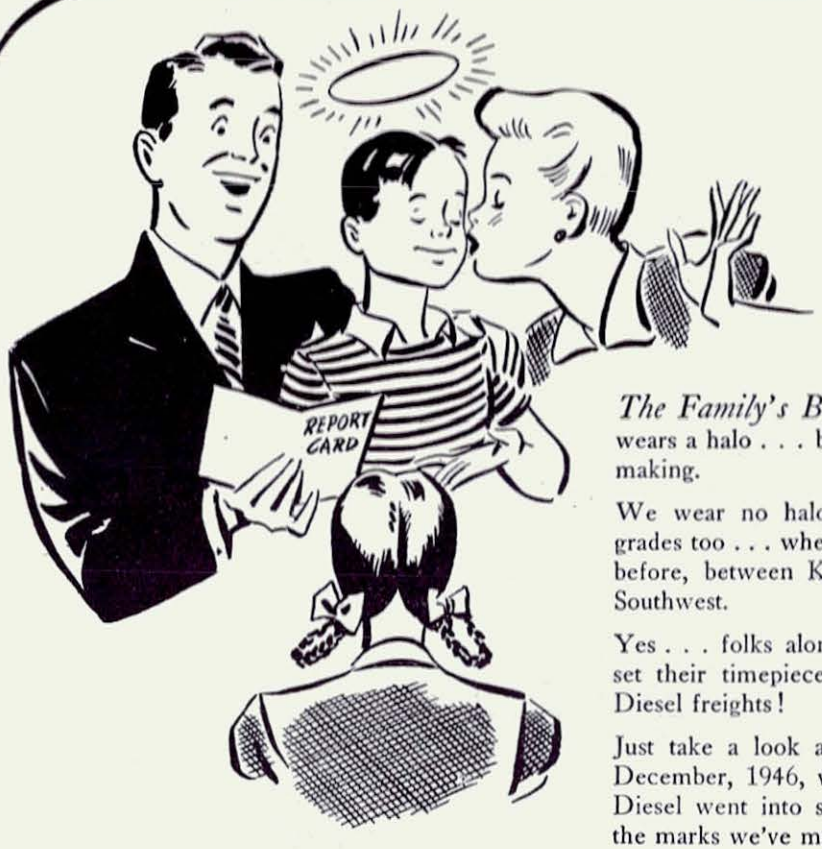
Serving eleven U.S. States, all nine Canadian Provinces

The Canadian National-Grand Trunk-Central Vermont system, largest on the continent, operates 23,697 miles of track . . . connects with U.S. railroads at many interchange border points . . . maintains fast *International* service between United States and "Everywhere in Canada"!

Via CANADIAN NATIONAL

THE RAILWAY TO EVERYWHERE IN CANADA

RAILWAYS • AIR LINES • STEAMSHIPS • EXPRESS
TELEGRAPHS HOTELS



The Family's Beaming . . . and Johnny wears a halo . . . because of the grades he's making.

We wear no halo, but we're making the grades too . . . wheeling the freight, as never before, between Kansas City and the Gulf Southwest.

Yes . . . folks along our lines really might set their timepieces by the passing of our Diesel freights!

Just take a look at our report card. Since December, 1946, when our first road freight Diesel went into service, here are some of the marks we've made:

Increase in Gross Tons per Train . . 15%

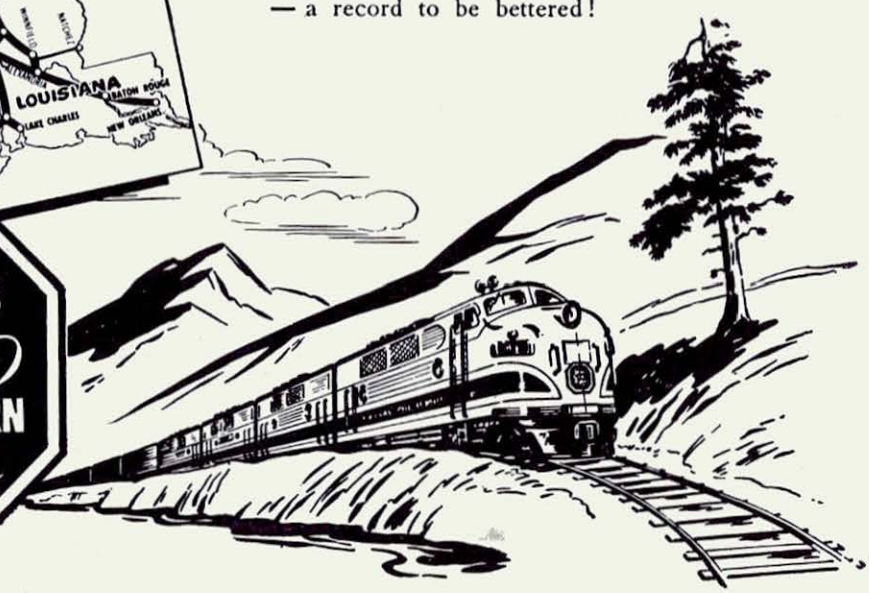
Increase in Speed of Freight Trains . 15%

Increase in Gross Ton Miles per Freight Train Hour . More than 26%

Our Through Freight Service Now is Over 70% Dieselized.

Any shipper, any railroader, knows this means consistently fast, dependable, on-time delivery of freight.

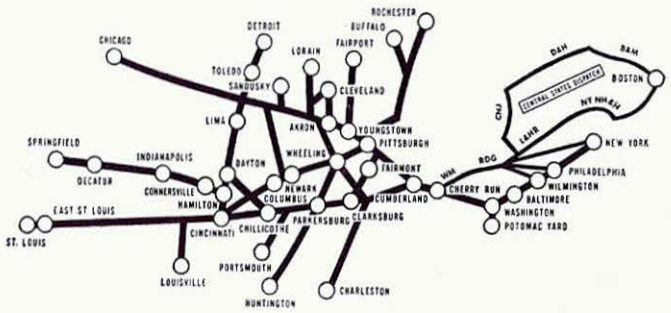
To us, it's simply a challenge — a record to be bettered!



KANSAS CITY SOUTHERN *Lines*

It's Clicking with Shipping Men!

SIDING-TO-SIDING DEPENDABILITY



Since its inauguration on March 3, 1947, B&O's Sentinel Service has demonstrated again and again its ability to provide Siding-to-Siding Dependability. From all over the country, enthusiastic comments have poured in—gratifying tributes to the success of a unique idea practically applied.

One of the chief features of B&O's Sentinel Service is "Automatic Records." Through modern communications and trained "Sentinels," your carload (certain commodities excepted) is watched and checked from the time it is received by the B&O until it is delivered by the B&O. Sentinel Service with "Automatic Records" gives you absolute Siding-to-Siding Dependability on fast carload freight—in accordance with published schedules.

Off-line shippers, too, benefit by Sentinel Service, for it is applied automatically to carloads between Sentinel gateways and destinations. *Ask our man!*

When speed and care mean time and money...

SHIP VIA

Wise shippers know that they can depend on Lackawanna for fast, reliable freight transportation. Lackawanna's new modern fleet of Diesel locomotives provide *overnight* service between the Great Lakes and the Atlantic and greatly accelerate freight delivery schedules.

Equally important to shippers of fragile or perishable goods is the care with which merchandise is handled at the Lackawanna terminals. Expert freight house crews, operating with the most advanced and efficient mechanized equipment, make certain that goods shipped via Lackawanna arrive at their destination *safely...and on schedule!*

What Lackawanna Is Doing to Serve Shippers!

NEW EQUIPMENT—During the past year, Lackawanna added to its equipment eight new 3000 h.p. Diesel road freight locomotives, 500 new box cars and 1000 hopper cars of 50-ton capacity. 500 additional box cars now on order will be put into service when delivered. Twenty new scows and six new carfloats will soon be ready to supplement Lackawanna's present large and modern fleet of marine equipment. The recent installation of 2-way short wave radio communication and dispatching on Lackawanna tugboats in New York harbor has contributed in an important way to the more efficient handling of water-borne traffic.

★ *It is because of these and other progressive Lackawanna policies, that more and more shippers are specifying—for New York bound and export freight—*

THE ROUTE OF PHOEBE SNOW —

LCL FREIGHT HANDLING—Pioneer in the modern method of handling freight by fork-lift and pallet, Lackawanna is one of the more extensive users of this type of equipment. Batteries of fork-lift trucks, with from 3000 to 4000 lb. load capacity, are in daily operation at 14 Lackawanna piers and stations . . . minimizing the manual handling of freight, providing greater speed and efficiency, and lessening the possibility of damage to fragile goods. An ever-increasing number of Impact Recorder tests also are proving of great value in cutting down loss and damage by insuring care in switching.

EDUCATING THE FREIGHT HANDLERS—To impress upon Lackawanna freight station employees their personal responsibility in preventing loss and damage, an intensive new program of education is being conducted. Small groups are instructed regularly on the most common causes of loss and damage and practical corrective measures are set up for their guidance.

* * *

Lackawanna Railroad

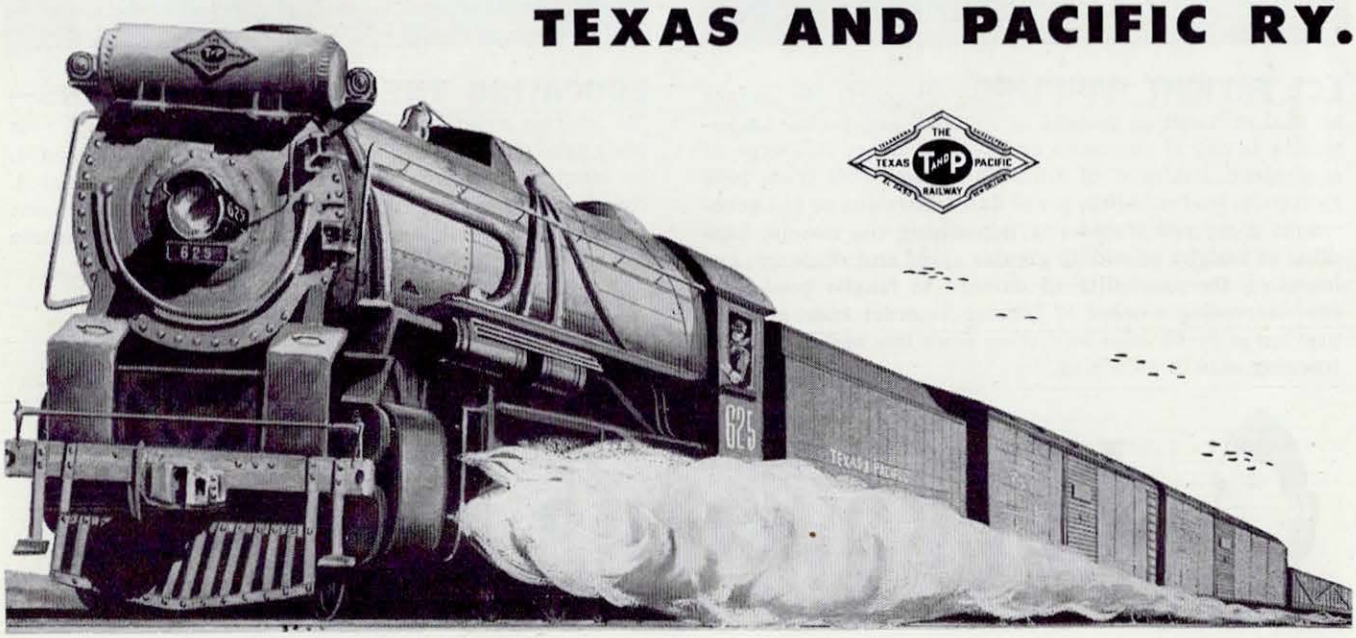
We "Blew the stack off" in '47!

FROM THE high plains of West Texas to the bayou country of southern Louisiana, Texas and Pacific trains last year thundered their way to an all-time peace time record.

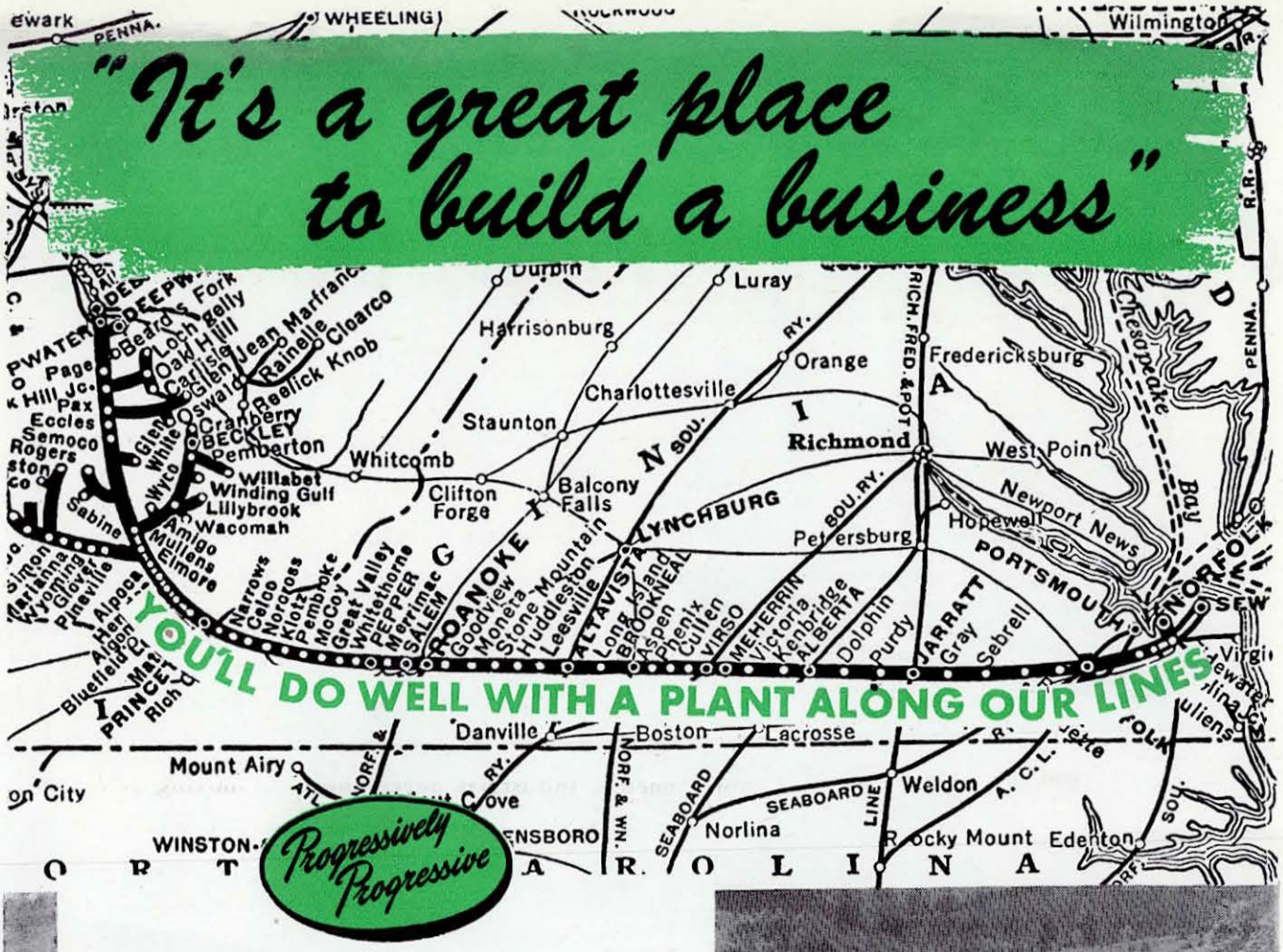
But down in the Great Southwest, records are made to be broken—whether in transportation, oil production or raising of prize beef cattle. That is why Texas and Pacific in 1947 poured millions of dollars back into roadway and equipment improvements. Industrial development is moving forward in seven-league boots . . . agricultural production is being stepped up ever higher, and the Texas and Pacific is keeping itself geared to meet the transportation challenge this intensified activity will bring.

During over three-quarters of a century of service to the fast-growing Southwest, the Texas and Pacific has been a vital factor in the development of some of this great region's major industries and cities . . . and during 1948, Texas and Pacific will "blow the stack off" again to maintain its reputation for efficient, dependable rail service.

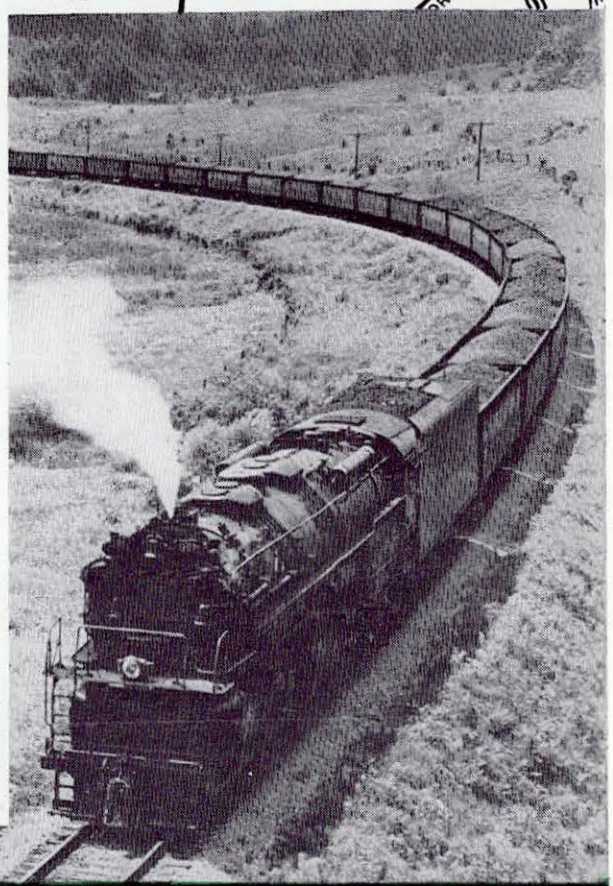
TEXAS AND PACIFIC RY.



"It's a great place to build a business"

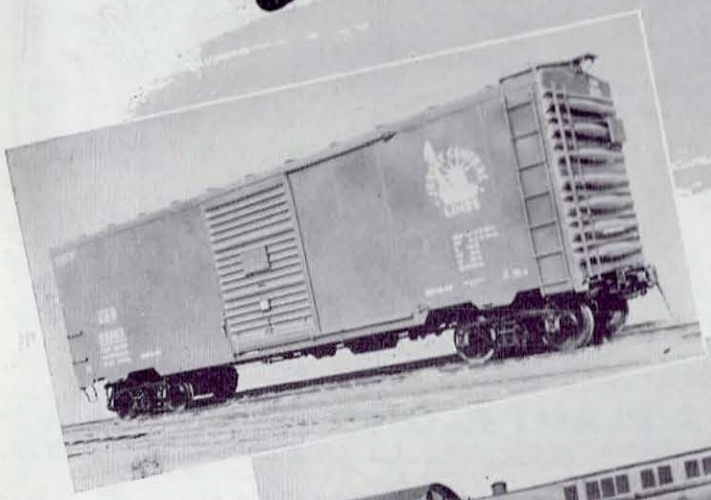


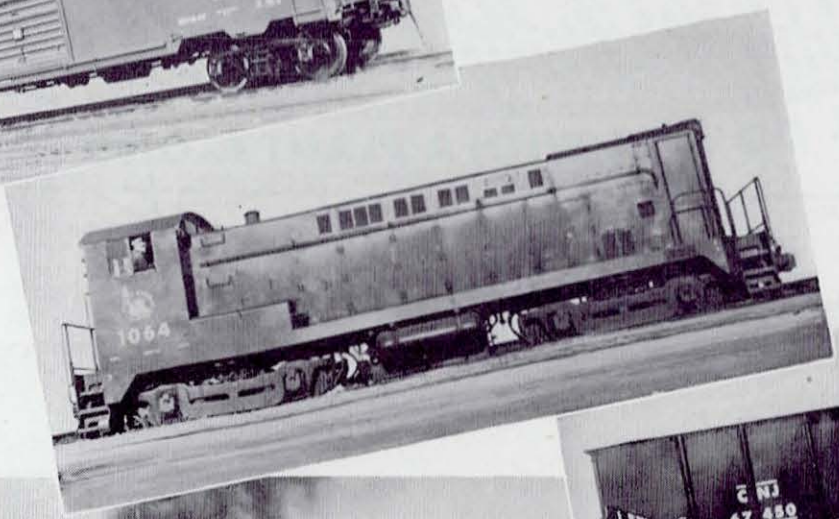
SEEN from any angle, West Virginia and southern Virginia offer a number of advantages for plant location. Here you are part of the industrially expanding South, yet near to northern markets. Cheap, easily available fuel and other raw materials, good labor supply, pleasant climate are all in your favor. As for solid evidence of a region's worth, look at the condition of the railroad which serves it. The Virginian reflects its customers' prosperity. With plenty of modern power, an excellently maintained plant and roadbed, it is ready, as always, to do a better transportation job for you. So our good advice to you is: "locate Virginian." And for goods destined our way, "Ship Virginian."

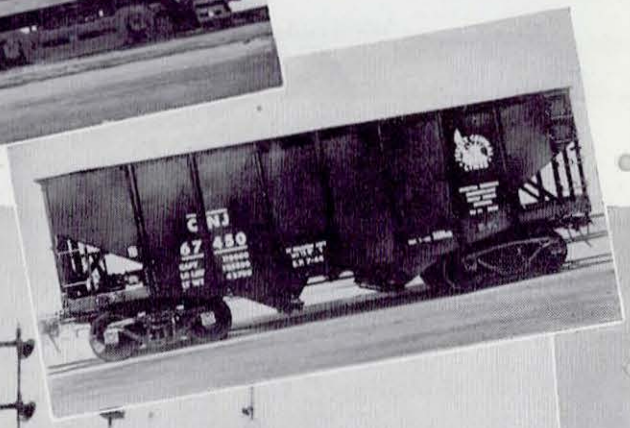


Ship VIRGINIAN

Progress on "THE BIG







JERSEY CENTRAL LINES

JERSEY CE

LITTLE RAILROAD"

WHAT'S behind the slogan "The BIG Little Railroad"? Just this. Experience through the years has proved that the Jersey Central Lines is big enough to handle all the transportation needs of the great industrial, mining, and farming areas it serves, and yet is small enough to give highly-important personalized service to its patrons.

For over a century this "BIG Little Railroad" has built a tradition of good railroading. It is constantly on the alert for improvements throughout the system and to utilize the most modern equipment to provide faster, safer, and more efficient service to shippers and passengers.

Outstanding new pieces of equipment to speed up fast freights over the road include big, powerful Diesel-electrics—and to improve yard service, Diesel-electric switchers have been installed—and more Diesel-electrics are on the way.

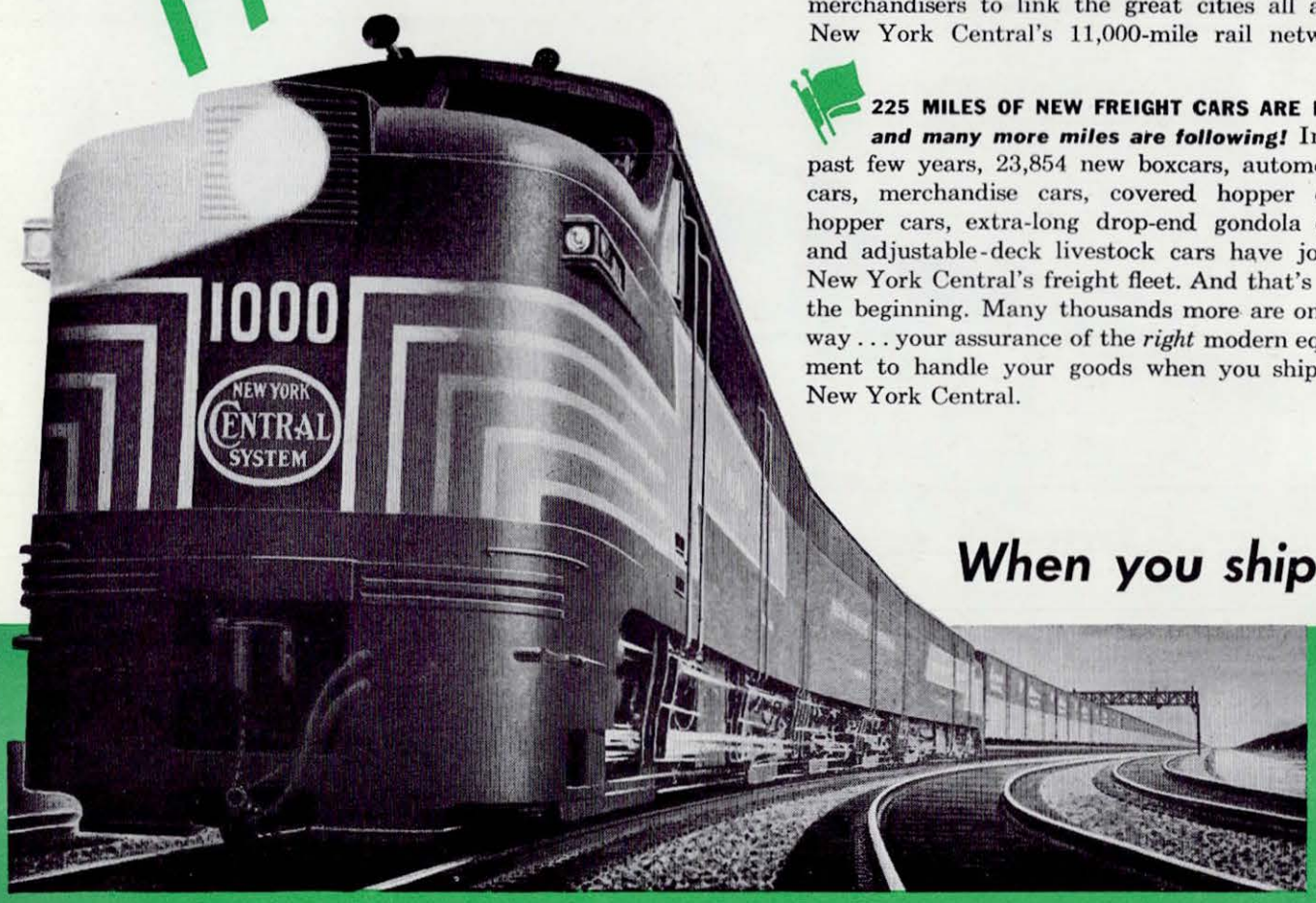
To serve shippers more efficiently, 1,383 new freight cars are being placed at their command. These include 1,250 fifty-ton box cars and 125 seventy-ton cement hoppers. General improvements and betterments to "The BIG Little Railroad's" physical properties include improved track, respaced signals, improved freight terminals and unloading platforms, new freight handling equipment and new shop machinery.

Routing your shipments Via Jersey Central Lines will provide assurance of courteous cooperation and efficient service.

NTRAL LINES

The GREEN FLAGS on the

Today's new freight and passenger equipment is only the "first section" of a $272,000,000 program of progress.



TODAY'S FREIGHT *PACEMAKER* *and more modern merchandisers following!* Overnight every business night, the smooth-riding, high-speed, red and grey *Pacemaker* cars race over the *Water Level Route* between the Atlantic Coast and the Great Lakes. Hauled by new streamlined Diesels, they clip a full business day from regular freight delivery schedules between New York, Buffalo and key mid-west centers.

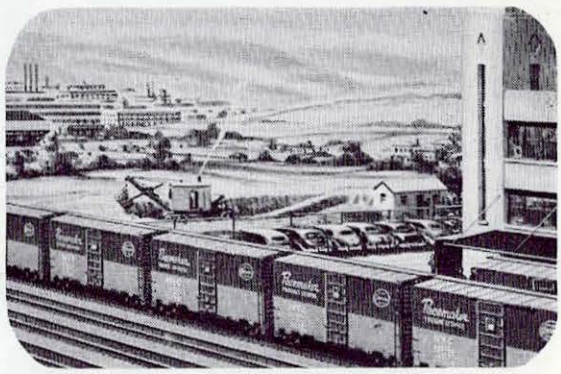
And today's *Pacemaker* service is *only* the pacemaker. It's setting the pattern for more modern merchandisers to link the great cities all along New York Central's 11,000-mile rail network.

225 MILES OF NEW FREIGHT CARS ARE HERE *and many more miles are following!* In the past few years, 23,854 new boxcars, automobile cars, merchandise cars, covered hopper cars, hopper cars, extra-long drop-end gondola cars, and adjustable-deck livestock cars have joined New York Central's freight fleet. And that's just the beginning. Many thousands more are on the way . . . your assurance of the *right* modern equipment to handle your goods when you ship via New York Central.

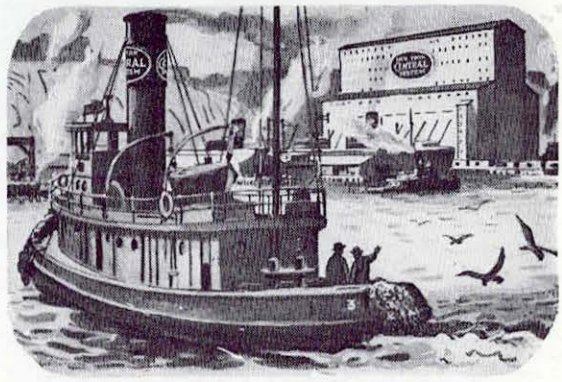
When you ship...

are Up—

NEW in New York Central!



NEW INDUSTRIAL LOCATION RECORDS ***and more new industry moving in!*** For three years running, New York Central's Industrial Development Department has set new records in helping industry find advantageous locations along this Railroad's 11,000-mile network. In 1947 alone, enough new industry moved in to produce 220,000 carloads of freight a year. And still requests pour in to find "Central" locations for other plants and warehouses.



EXPANDED FOREIGN FREIGHT SERVICE ***and more improvements to follow:*** Since the war, New York Central has greatly expanded its Foreign Freight Traffic Department. Experts have added to its staff at home. And contacts abroad have been widened and improved, notably through addition of American Express Company as General Foreign Agent.

Hand in hand with this expansion has gone improvement in Central's multi-million-dollar shipside facilities at the great Atlantic ports it serves. And more such improvements are blueprinted . . . ready to meet the wider needs of America's importers and exporters.

28 NEW PASSENGER STREAMLINERS FOR 1948! The great all-new *Pacemaker* is here. So is the new, stainless steel *James Whitcomb Riley*. And more new leaders for the Great Steel Fleet are on the way.

***when you travel...enjoy* the NEW in New York Central!**

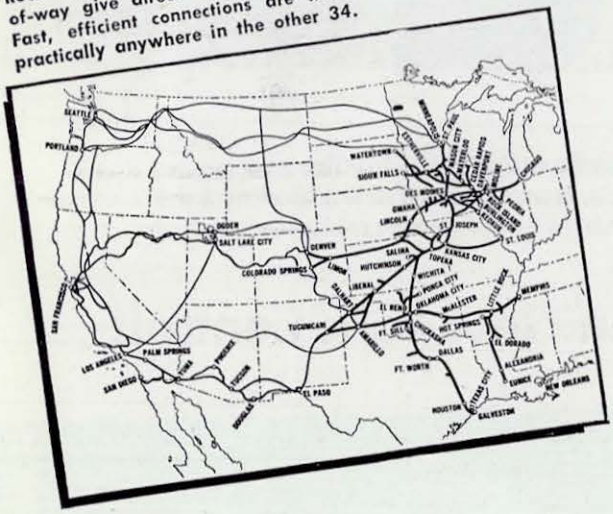
NEW YORK CENTRAL

The Water Level Route

NEW YORK CENTRAL SYSTEM

A hundred million dollars worth

Rock Island's 8000 miles of modern right-of-way give direct service to 14 states. Fast, efficient connections are made to practically anywhere in the other 34.

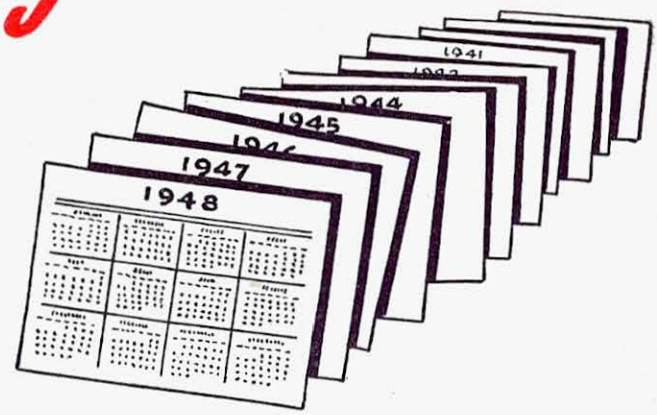


"ROCKET FREIGHTS" brought a new standard of speed and efficiency to freight transportation with their introduction by Rock Island. Today Rock Island's great fleet of Diesel locomotives haul mile-long trains of through-freight at express speeds. They have reduced the running time on many of their freight schedules. And on the run from St. Paul to Houston they approach the total *passenger* running times of other railroads. Similar speed-ups have been made possible for small shippers by more than 23,000 Rock Island, "package cars" annually. These cars are given through-service, their contents remaining undisturbed until their stations are reached.

ROCK ISLAND

of Planned Progress in eleven years

has earned for ROCK ISLAND an A-1 rating among "class ones"



Each year, for the past eleven years, has found the Rock Island a better, more efficient railroad, contributing more and more to freight transportation. "Planned Progress" is Rock Island's name for this program of continuous improvement. And Rock Island has already invested more than a *hundred million dollars* in putting the program across.

One of Rock Island's most spectacular improvements was the construction of the famous Cimarron Bridge. This bridge made possible a cut-off that by-passes 12.06 miles of old, winding, undulating line. It has five truss spans of 250 feet each.

1333 bridges were built or strengthened. Miles of new track were built to shorten distances between important terminals. Curves were straightened and grades were reduced to cut costs and permit higher speeds. Stations were built or remodeled. New car shops and testing laboratories were put into service. Centralized traffic control and short wave radio were installed —the latter linking dispatchers with freight conductors and engineers. New, more powerful Diesel and steam locomotives were bought and put to work.

All these have stepped up Rock Island freight schedules and added to safety. Rock Island has risen in efficiency from a position below the Class I average in 1937 to a position of *leadership* among Class I roads in 1948.

Yet today Rock Island plans still further progress involving more millions of dollars. Co-ordinated rail-truck service for L.C.L. shipments, already covering 4000 miles of highways, is being extended wherever better, faster transportation will result. More and better locomotives are on the way, too—and more freight stations are to be modernized. In the future, as during recent years, watch Rock Island for progress—*planned progress* that means finer freight service!

LINES *Route of the Rockets*

FASTER, MORE DEPENDABLE and SAFER---

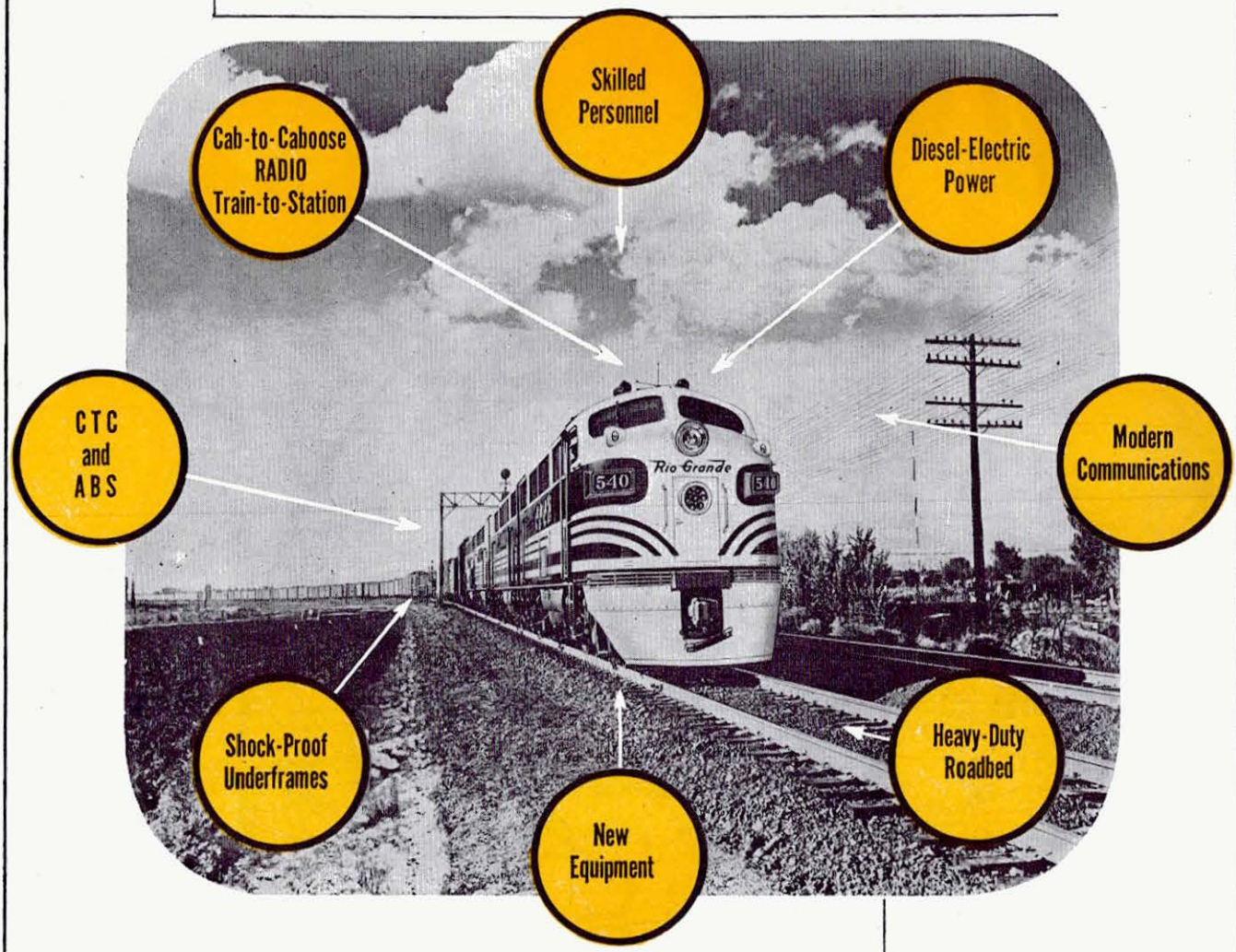
handling of freight traffic has been the constant aim of PROGRESS on the Pittsburgh & West Virginia Railway.

The 2,000 h.p. Diesel-electric locomotives pictured are one of many improvements made last year to provide faster over-the-road freight movements.

The PITTSBURGH & WEST VIRGINIA RAILWAY

---welcomes the opportunity to better serve you.

R-I-O G-R-A-N-D-E *spells* MODERN RAILROADING

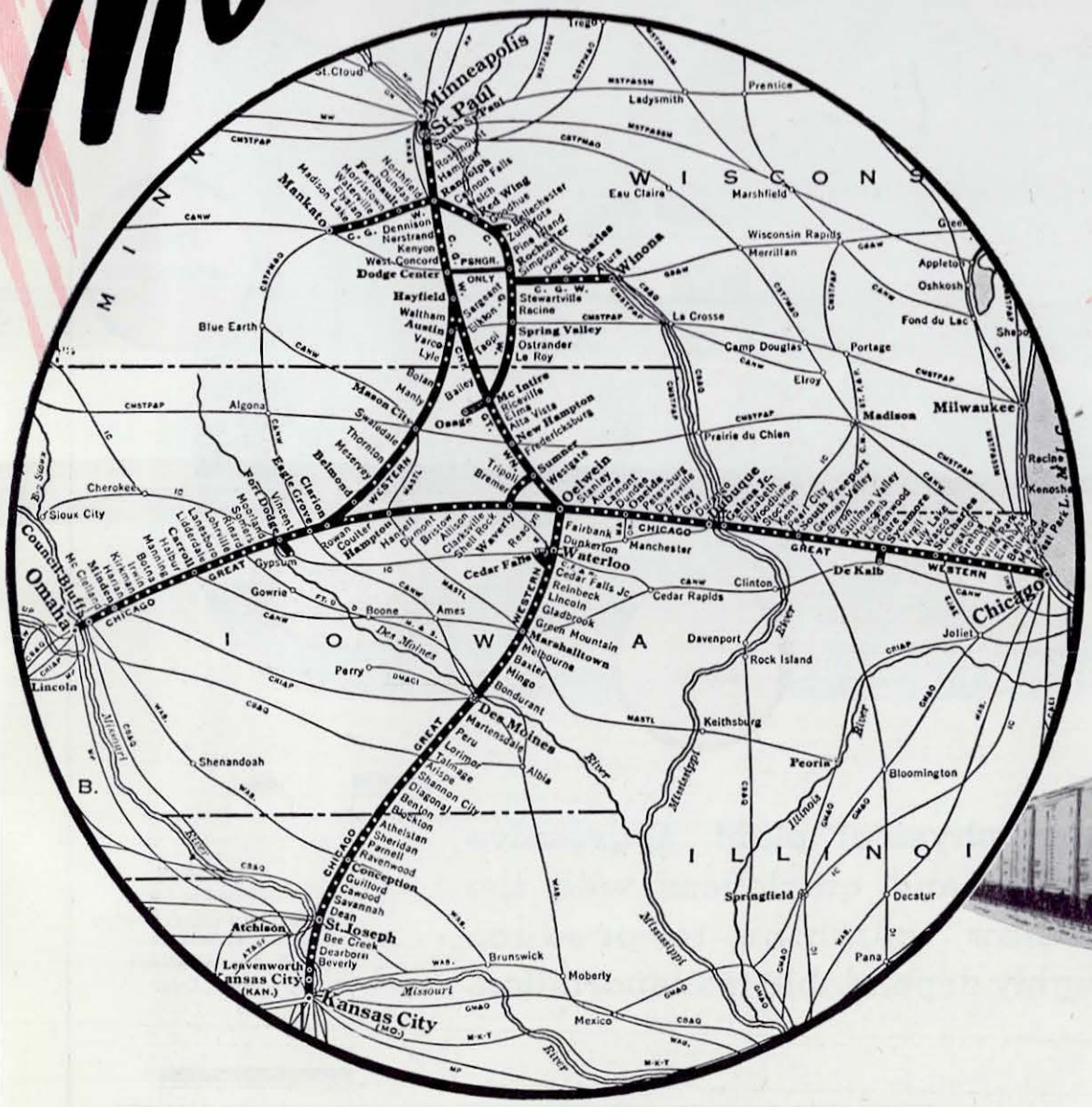


Superior physical plant, aggressive leadership, and employees with the "know-how" combine to produce thoroughly dependable transportation.

F. C. HOGUE
Vice President-Traffic
Denver & Rio Grande Western Railroad
Rio Grande Building
Denver, Colo.

Rio Grande

"More Power to You"!



GEORGE R. GREGG, General Traffic Manager
309 West Jackson Boulevard, Chicago 6, Illinois
Traffic Offices in the Larger Cities

CHICAGO GREAT

GREAT WESTERN'S FAST FREIGHTS

Diesel Powered

FOR BETTER SERVICE TO SHIPPERS AND RECEIVERS

to, thru and from
these 5 Important Gateways

CHICAGO — MINNESOTA TRANSFER { MINNEAPOLIS / ST. PAUL

COUNCIL BLUFFS (OMAHA) — ST. JOSEPH — KANSAS CITY

When you ship specify "C. G. W."

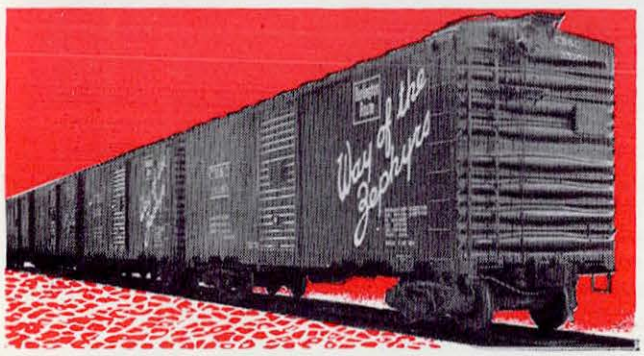
WESTERN RAILWAY

$33,845,000 Worth of NEW CARS and LOCOMOTIVES

. . . another example of Burlington Freight Progress!

It takes a lot of equipment to do a transportation job as big as ours. For example, the Burlington Lines now have over 1100 locomotives — more than 47,000 freight cars. But that's not all . . . a $33,845,000 car and locomotive building program is now under way.

Twenty-one new diesel-electric locomotives have recently been ordered by the Burlington. They will be placed in operation as they are received, adding to the fleet of over 200 Burlington diesels now serving shippers and travelers. Estimated cost: $12,845,000.



Burlington's 1947•48 car-building programs included over 6,000 new freight cars—approximately 50% of which are already in service. Included are box cars, parts cars, hopper cars, covered hopper cars, ballast cars, stock cars, flat cars and gondola cars. Estimated cost: $21,000,000.

BURLINGTON LINES

CHICAGO, BURLINGTON & QUINCY RAILROAD • COLORADO and SOUTHERN RAILWAY
FORT WORTH and DENVER CITY RAILWAY • THE WICHITA VALLEY RAILWAY
BURLINGTON—ROCK ISLAND RAILROAD

Everywhere West

GREAT WESTERN'S FAST FREIGHTS

Diesel Powered

FOR BETTER SERVICE TO SHIPPERS AND RECEIVERS

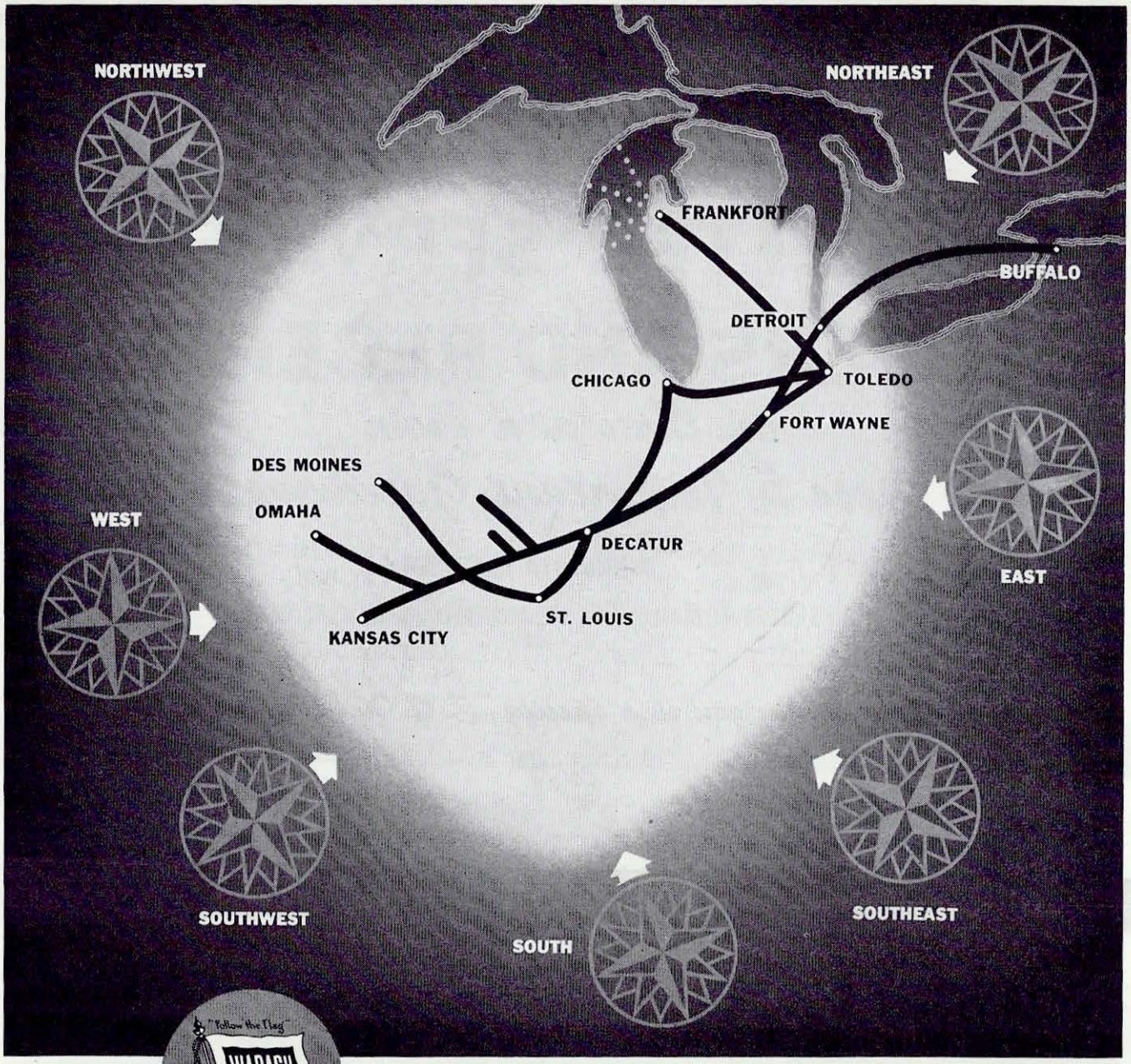
to, thru and from
these 5 Important Gateways

CHICAGO — MINNESOTA TRANSFER { MINNEAPOLIS / ST. PAUL

COUNCIL BLUFFS (OMAHA) — ST. JOSEPH — KANSAS CITY

When you ship specify "C. G. W."

WESTERN RAILWAY



Your Compass Always Points to the WABASH

WHETHER you're located East or West, North or South your compass says "Ship Wabash" to and through "The Heart of America."

Direct-line service from Buffalo to Kansas City permits your freight to "highball" between East and West. And the strategic location of the Wabash serves you equally well between North and South.

Call a Wabash representative for details of Wabash Service!

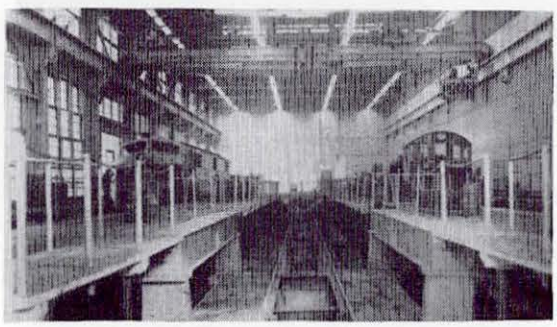
C. J. SAYLES, *Gen. Frt. Traf. Mgr.*, St. Louis 1, Mo.

WABASH RAILROAD

CENTRAL OF GEORGIA

MODERN *Up and Coming*

FREIGHT SERVICE FOR THE EXPANDING SOUTHEAST



Interior of Diesel Shop showing top of 90-ton electric drop table which serves 3 tracks

Exterior of Diesel Shop at Macon, Ga.

As in the busy, energetic territory we serve, the rate of progress on the Central of Georgia continues unabated. For instance, our Diesel fleet now includes nine freight road Diesels supplemented by a pool of twenty-three Diesel switchers. This modern power is serviced in a model new Diesel shop at Macon completely equipped for running maintenance as well as heavy repairs.

The Central of Georgia Railway is continually on its toes to give the expanding Southeast the best in modern railroading. Shippers are reaping the benefits of better main line schedules—improved terminal facilities. Modern communications systems play a vital part in our efficient operation—during the past year a two-way radio system was installed in our Atlanta yard. 425 miles of our lines are operated under automatic signals—C.T.C. has been extended to include a total of 62 miles of main line operation. A system of coordinated rail-truck service covering a network of 1700 miles is planned, to bring the advantages of fast l.c.l. service to many more communities.

Both the industrial giants and smaller industries have found the Southeast an ideal place to grow and prosper. You will find our Industrial Department a friendly, reliable source of information and your inquiry will be treated as strictly confidential.

CENTRAL OF GEORGIA *Railway*
SAVANNAH, GEORGIA

A GOOD FRIEND ALL ALONG THE LINE

$33,845,000 Worth of NEW CARS and LOCOMOTIVES

. . . another example of Burlington Freight Progress!

It takes a lot of equipment to do a transportation job as big as ours. For example, the Burlington Lines now have over 1100 locomotives — more than 47,000 freight cars. But that's not all . . . a $33,845,000 car and locomotive building program is now under way.

Twenty-one new diesel-electric locomotives have recently been ordered by the Burlington. They will be placed in operation as they are received, adding to the fleet of over 200 Burlington diesels now serving shippers and travelers. Estimated cost: $12,845,000.

Burlington's 1947•48 car-building programs included over 6,000 new freight cars—approximately 50% of which are already in service. Included are box cars, parts cars, hopper cars, covered hopper cars, ballast cars, stock cars, flat cars and gondola cars. Estimated cost: $21,000,000.

BURLINGTON LINES

CHICAGO, BURLINGTON & QUINCY RAILROAD • COLORADO and SOUTHERN RAILWAY
FORT WORTH and DENVER CITY RAILWAY • THE WICHITA VALLEY RAILWAY
BURLINGTON—ROCK ISLAND RAILROAD

Everywhere West

in 1947-48

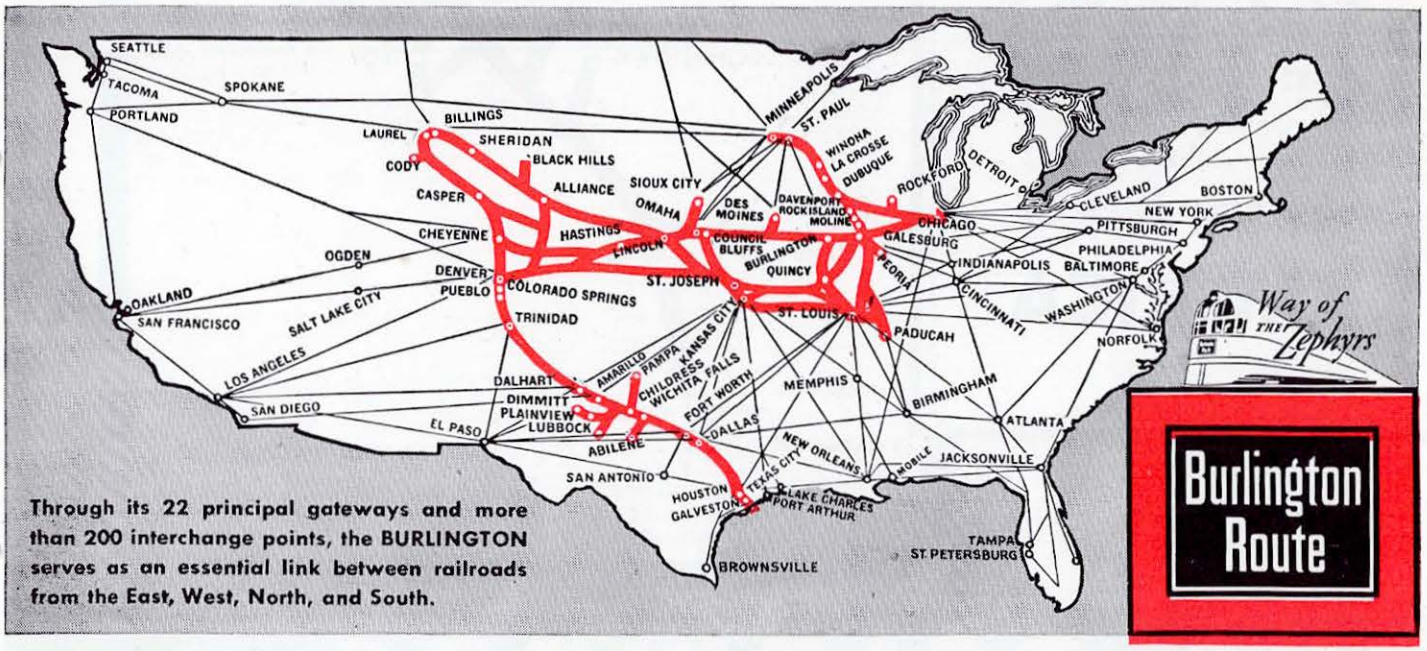
Freight progress is a continuing process on the Burlington . . . a day-by-day, year-by-year development which means better service to our patrons. In addition to the current car and locomotive building programs, the Burlington is investing time and money in such projects as these:

Centralized Traffic Control
The Burlington has already invested over $3,490,000 in this ultra-modern signal system. **"CTC"** enables a dispatcher to instantly control train movements over many miles of track, saving time and speeding traffic.

Two-Way Radio
Radio between engineers, trainmen and yardmasters helps handle freight movements faster, more efficiently. The Burlington was among the first to use two-way radio; today, this system is in daily operation at three strategic points on this railroad.

Improved Yard Facilities
Smooth handling in the switch yards saves shippers valuable hours. Burlington has invested millions of dollars in switch yard development—including new hump yards and expanded, improved yard facilities at key interchange points.

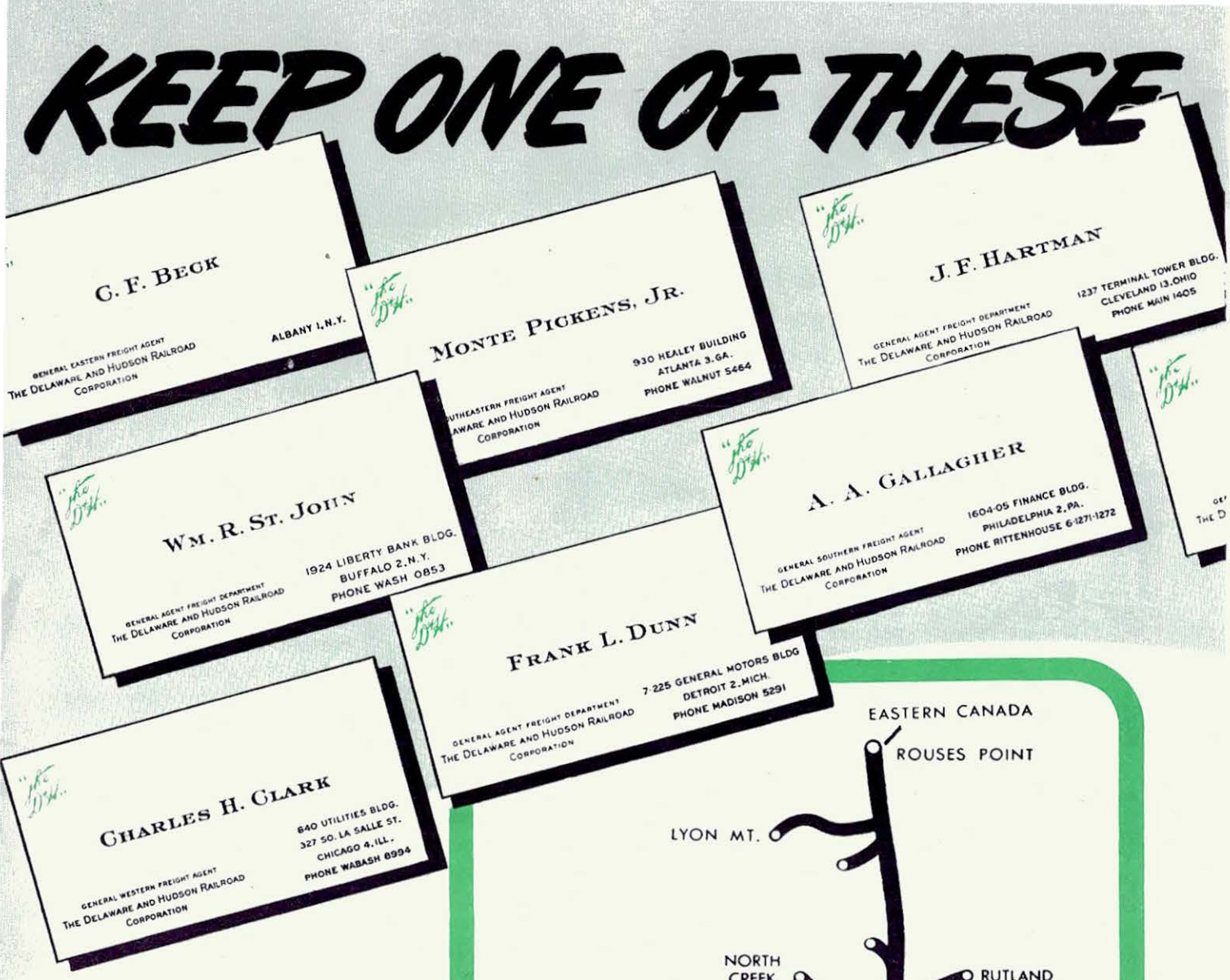
Roadway, Structures, Equipment
Burlington Lines now serve 14 states with 11,000 miles of roadway. In 1947, these lines expended more than $93,000,000 in their continuous program of maintenance and improvement of roadway, structures and equipment.



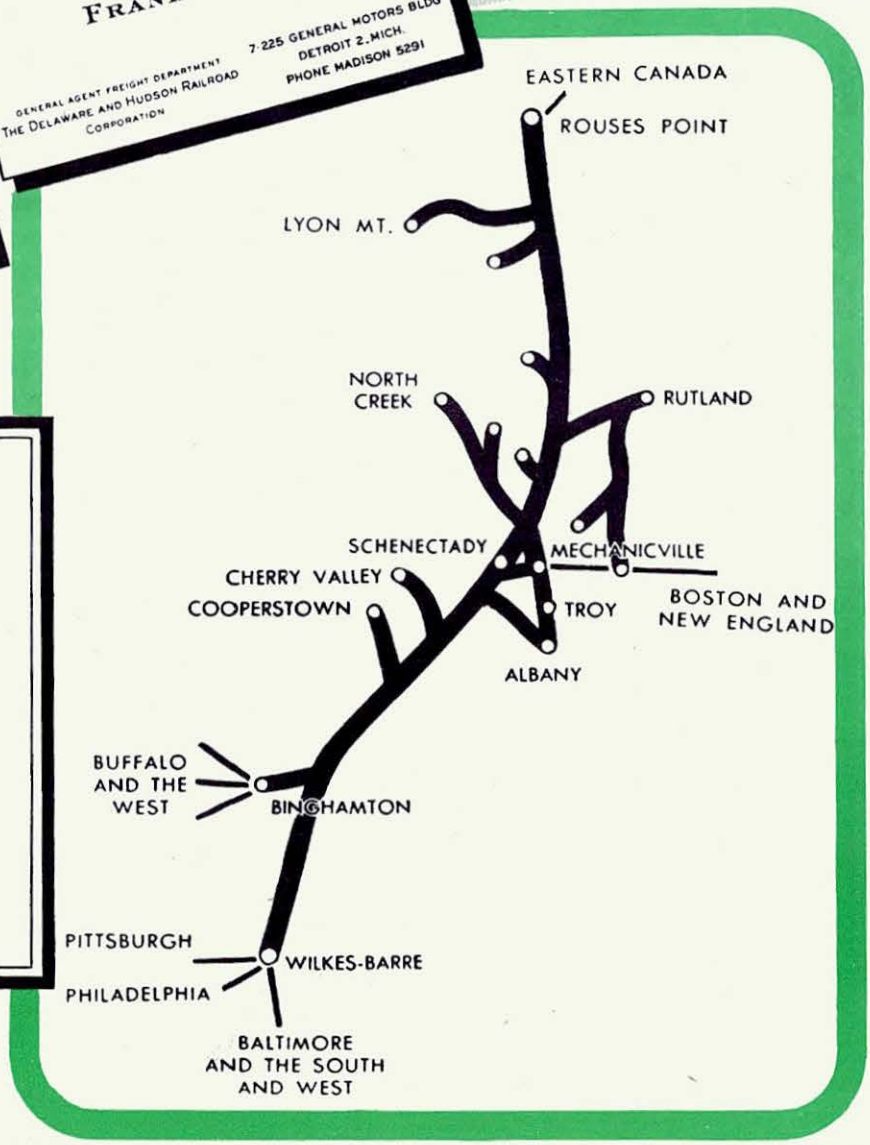
Through its 22 principal gateways and more than 200 interchange points, the BURLINGTON serves as an essential link between railroads from the East, West, North, and South.

AN ESSENTIAL LINK IN TRANSCONTINENTAL TRANSPORTATION

KEEP ONE OF THESE



125 YEARS OF SERVICE *to the shippers of* AMERICA



THE DELAWARE AND HUDSON RAILROAD CORPORATION
ALBANY, N. Y.

CARDS ON FILE . . .

. . . to help you use NEW ENGLAND'S MOST IMPORTANT BRIDGE ROUTE

ANY of these 15 traffic experts can be of real service to shippers to or from Eastern Canada, New England, the South, or the West. Their business is to make the Delaware and Hudson work for you as it has for shippers everywhere during 125 years of service. You will be shown the advantages of using the D & H bridge route connecting the Pennsylvania Railroad, Central Railroad of Pennsylvania, Lehigh Valley, Erie, and Lackawanna on the south and west, with the Boston & Maine and the Boston & Albany on the east, and the Canadian National and Canadian Pacific on the north. Ample power — dependable schedules — prompt and courteous information furnished, when requested, of the movement of your traffic.

Consult any D & H representative or write Industrial Development at Albany, N. Y. concerning better plant locations in D & H territory.

"the D&H"

HUDSON RAILROAD

NEW YORK CITY

Pennsylvania Railroad Solves a Riddle . . .

NEW MERCHANDISE CARS specially designed for the job are the answer to the problem that's puzzled railroad men and shippers for years!

Developed after intensive research by the Pennsylvania, these new cars carry *more* merchandise . . . and carry it without damage!

They're longer over-all for bigger LCL capacities . . . they're equipped with special load-securing devices which make loading more efficient and eliminate damage at one and the same time!

Many are in service right now . . . and a whole new fleet on the way. Along with them, over 4,000 brand-new freight cars and more than 300 new Diesel-electric locomotives for road freight and switching service.

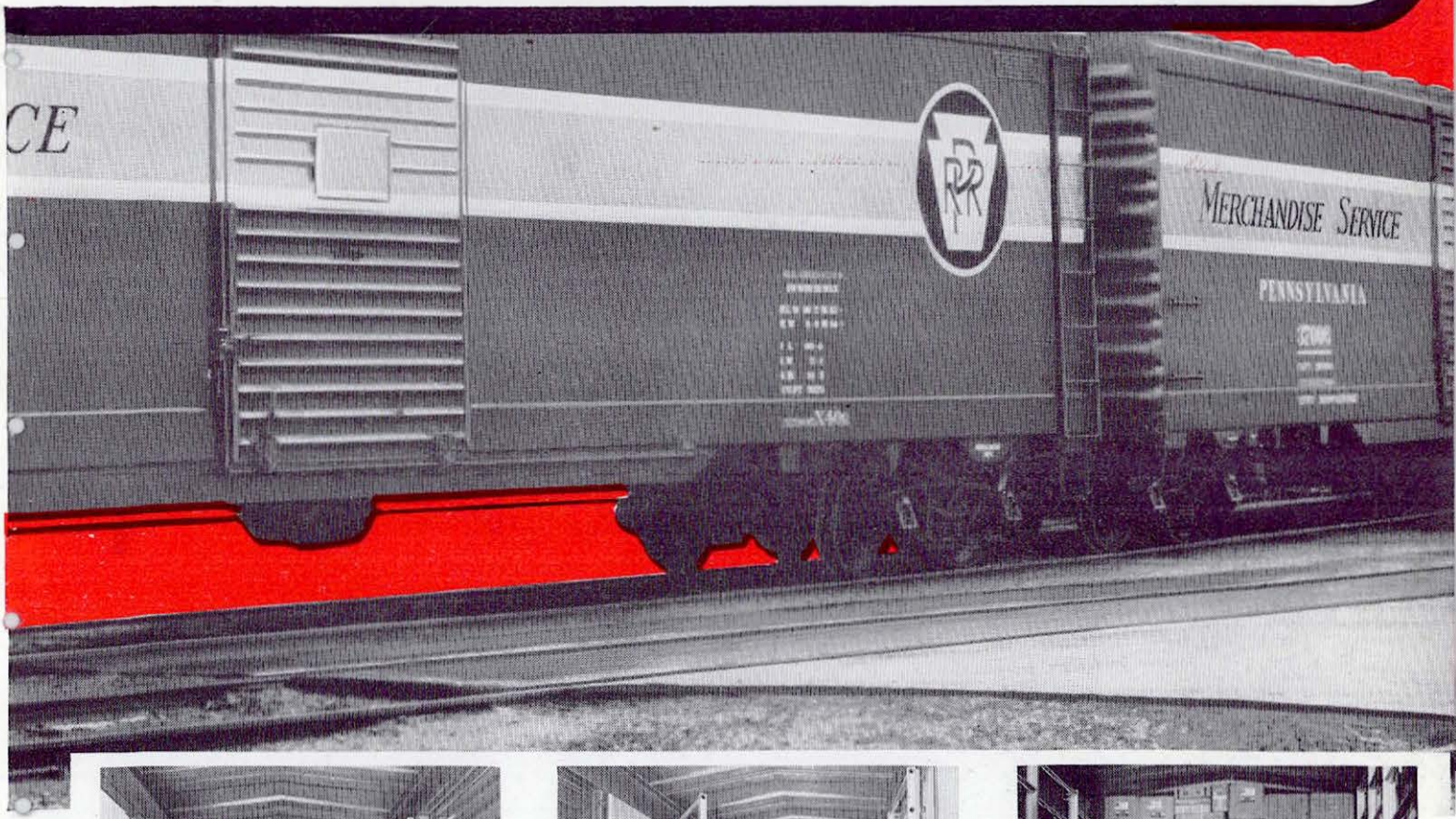
Adds up to lots of good news for shippers . . . postwar progress aplenty on the Pennsylvania!

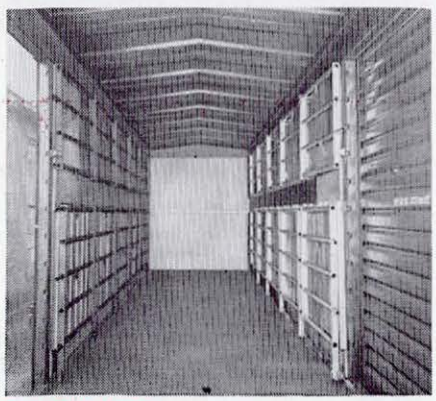
PENNSYLVANIA RAILROAD

Serving the Nation

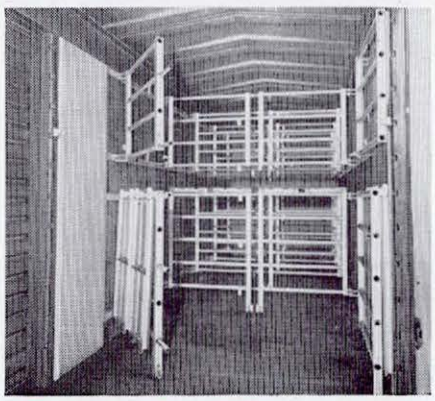
HOW TO

INCREASE THE LOAD... DECREASE THE DAMAGE!





LOADER'S VIEW of the interior. It's a longer car (some are 20 feet longer, some 10 feet longer than standard). Loads as high as 57 tons! Here, the load-securing gates are swung back along sides of car, permitting its use for general service if needed.



LOOKS LIKE HIGH HURDLES! Here the load-securing gates are locked into position, forming compartments about 6 feet deep into which merchandise is packed. Shelves half-way up hold weight of top half of load, prevent crushing.

HOW THEY LOAD. As each compartment is filled, gates are swung and locked, holding merchandise securely in place. Can't shift, can't tumble about . . . damage eliminated. P.R.R. on-the-job tests of many different devices proved these best.

Diesel Pushers "Pep"

With steam power at head end, mile-long freights are helped over mountains by a powerful Diesel-electric locomotive, thus expediting movements of trains.

LEHIGH VALLEY

Up "Entire System

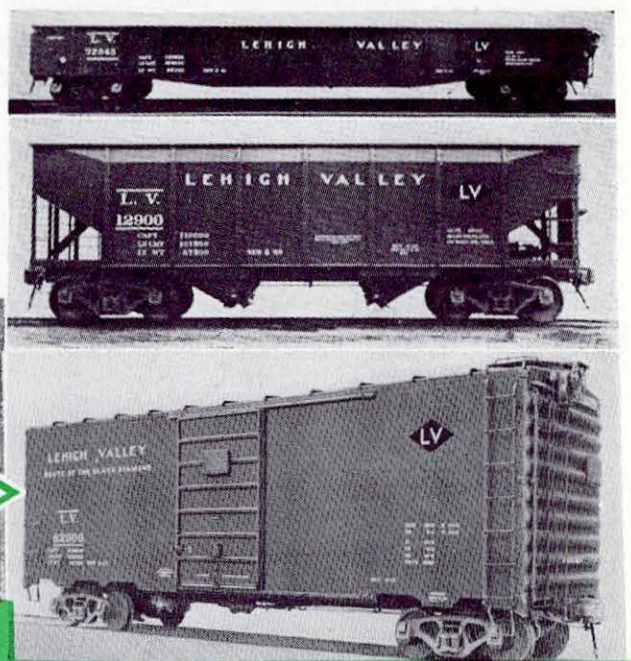
Reduce Time Over Grades and Simplify Operations

THE Lehigh Valley is the only railroad, to our knowledge, that purchased 5400 hp. Diesel-electric locomotives to improve freight operation by using them exclusively in pusher service.

This large expenditure was made primarily to expedite freight movements over 21 miles of difficult mountainous grades which is only a small percentage of the total mileage operated. This change from steam to Diesel pushers exemplifies the Valley's earnest effort to provide the best in transportation and to give shippers the fastest and most dependabe service possible. Other equipment additions to improve service include:

500 50-ton steel box cars, 500 55-ton double hopper coal cars and 100 70-ton steel gondola cars. In addition all locomotives and freight cars are kept in good serviceable condition with hundreds of cars being modernized.

The track and roadbed and other physical property is being improved constantly to expedite traffic safely. Lately there were installed 5,653 gross tons of new rail, 239,377 creosoted ties and 114,148 cubic yards of ballast, to keep the Lehigh Valley's precision freight service at the peak of perfection.



RAILROAD

THE ROUTE OF THE BLACK DIAMOND

The Power.

Modern power . . . Diesel electric power . . . with the authority to move huge quantities of freight with ease and efficiency. Power for the long haul . . . power for the short haul. High speed power that permits scheduling to suit your every shipping need. Sm-O-O-th hauling power that delivers the goods in perfect condition.

Diesel power in the important terminal yards, where new Diesel switchers high-speed the handling of carloads to markets and factories.

Radio power that brings the swift magic of wireless communication to freight-handling operation — a service PLUS to you.

All these are yours with the precision rail transportation now offered by the Southwest's hometown railroad. Five crack Katy freights, operating on stepped-up daily schedules, afford dependable, on-time service between Oklahoma and Texas and the North, with extensive connecting service at terminals.

Katy's equipped for even heavier, longer hauls, smoother handling of your shipments, to clip still more precious hours from your freight-in-transit time.

For dependable, careful, time-saving service to and from the Southwest . . . ship KATY!

Ship Via the Southwest's Main Supply Line

MISSOURI-KANSAS-TEXAS

KATY PACKER

Northbound daily, Fort Worth to Kansas City and St. Louis.

Fort Worth to Kansas City. 23 hrs.
Fort Worth to St. Louis. . . . 31 hrs.

KATY KLIPPER

Daily, St. Louis and Kansas City to Fort Worth and Oklahoma City.

St. Louis to Fort Worth. . 31 hrs.
St. Louis to Oklahoma City. . . . . 24½ hrs.
Kansas City to Fort Worth. . . . . 19½ hrs.
Kansas City to Oklahoma City. . . . . 13 hrs.

KATY BULLET

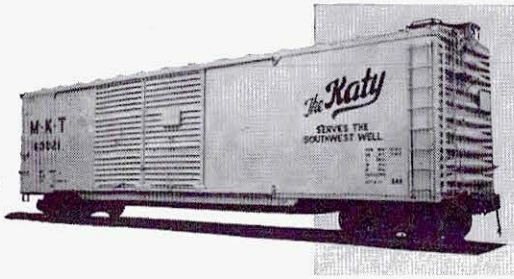
Daily from Kansas City and St. Louis to all main Southwestern points.

KATY KOMET

Katy's fastest—Southbound daily to all main-line points except Oklahoma City and Tulsa.

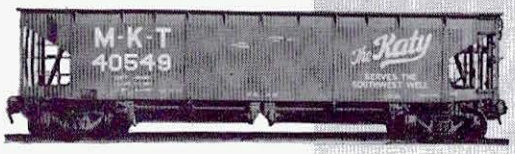
St. Louis to San Antonio. 36½ hrs.
St. Louis to Dallas. . . . . 28½ hrs.
St. Louis to Houston. . . . . 36½ hrs

. . . to move Mountains of Freight . .



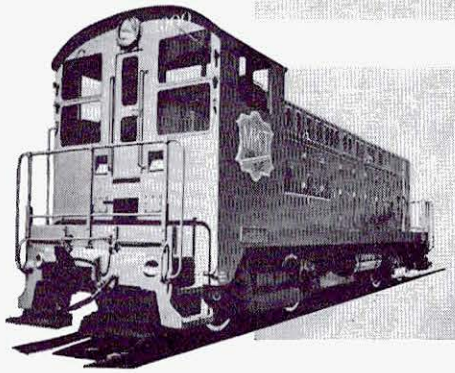
NEW BOX CARS

—hundreds of them, augment Katy's fleet of heavy cargo transportation.



NEW OPEN-HOPPER CARS

available for quick, efficient, versatile service to shippers.



NEW DIESELS

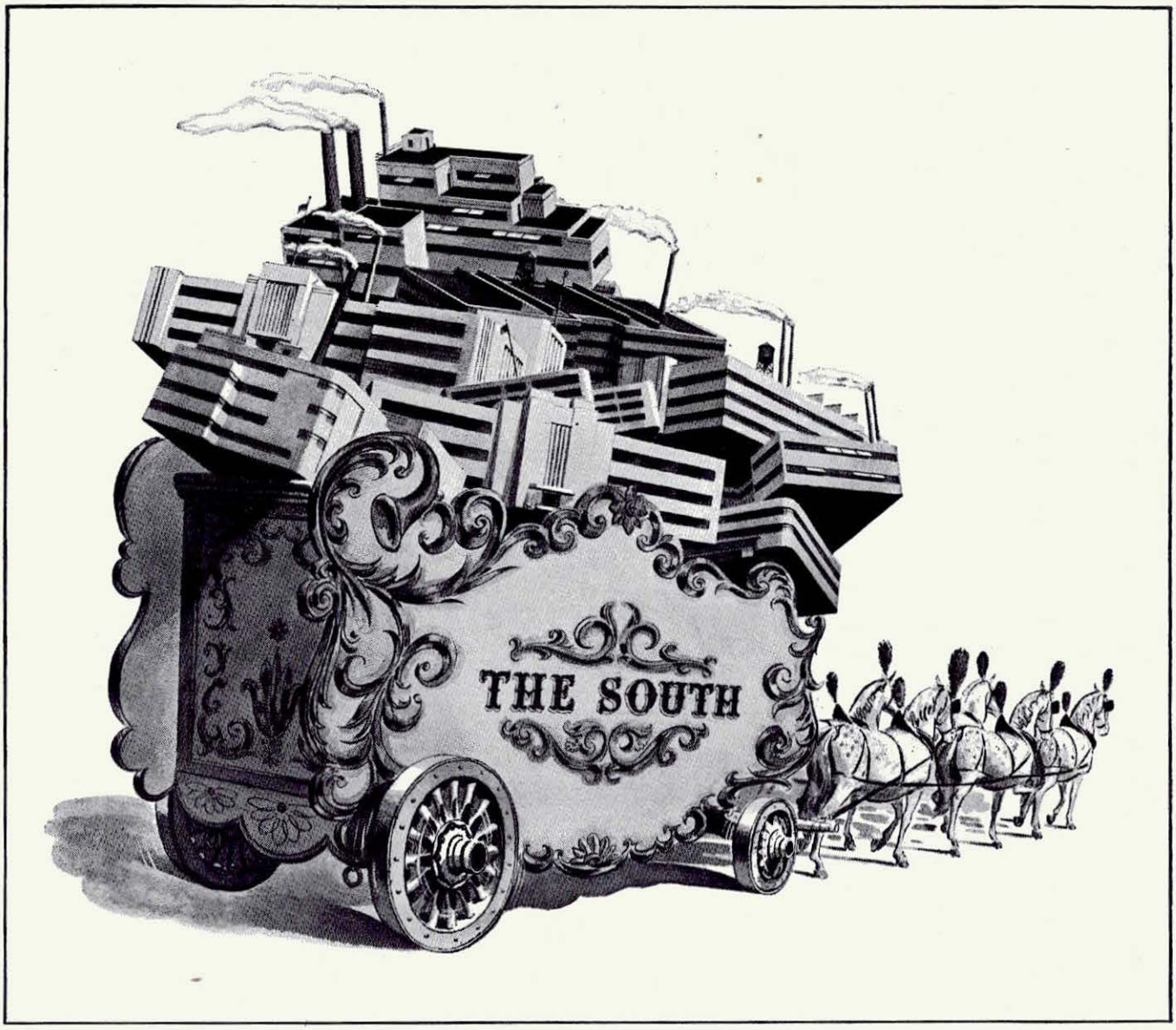
expedite transfer of your freight at major terminals —or road-haul it with speed and economy.

KATY'S GOT IT!

M-K-T
KATY RAILROAD
MISSOURI-KANSAS-TEXAS

RAILROAD SYSTEM

48



Industrial Bandwagon

SOON, the greatest industrial show on earth will be "playing" in the South!

For this progressive, fast-growing area . . . served by the 8,000-mile Southern Railway System . . . is a land of gargantuan opportunities. Here, new factories are springing up almost as fast as the "big-top" the night before a circus. Here, both old and new plants are growing to jumbo size . . . and prospering . . . thanks to a colossal list of natural and economic advantages.

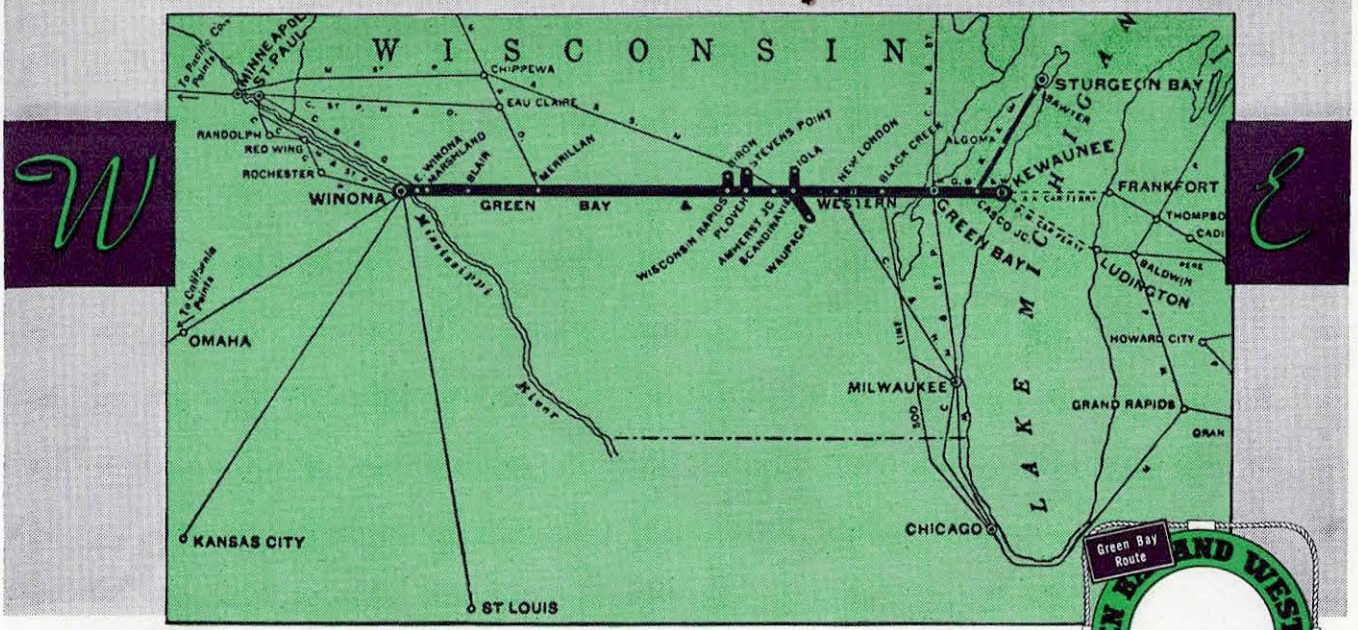
So step right up! Hop aboard this industrial bandwagon! For a brighter business future . . . "*Look Ahead—Look South!*"

Ernest E. Norris
President

LOOK SOUTH
LOOK AHEAD

SOUTHERN RAILWAY SYSTEM
The Southern Serves the South

GREEN BAY *and* WESTERN LINES

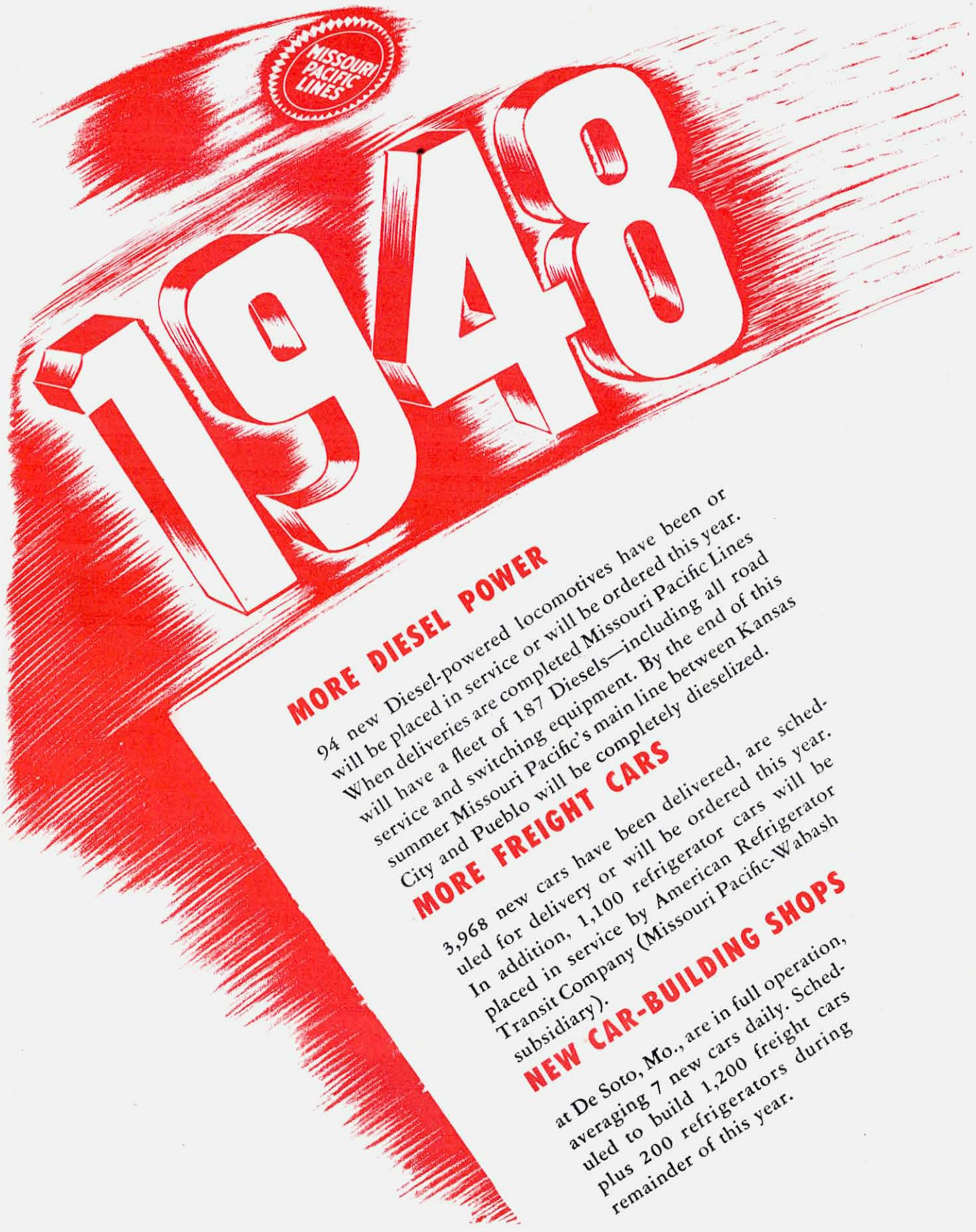


Sidestep terminal delay with this fast

EAST-WEST LINK

Kewaunee and Winona are two important names for shippers to remember. Termini of the time-saving Green Bay Route, one is an all-year lake port unloading daily car ferries from Frankfort and Ludington; the other an uncongested gateway to speed your shipments westward.

Through schedules, coordinated motor truck transport, and progressive modernization provide better and better service over the strategic Green Bay Route. Here too, in the heart of America's Dairyland, are many opportunities for industrial expansion, including convenient markets and good supply. Write for traffic schedules and other pertinent information to: Green Bay and Western Lines, Green Bay, Wisconsin.


MISSOURI PACIFIC LINES
1948
MORE DIESEL POWER
94 new Diesel-powered locomotives have been or will be placed in service or will be ordered this year. When deliveries are completed Missouri Pacific Lines will have a fleet of 187 Diesels—including all road service and switching equipment. By the end of this summer Missouri Pacific's main line between Kansas City and Pueblo will be completely dieselized.
MORE FREIGHT CARS
3,968 new cars have been delivered, are scheduled for delivery or will be ordered this year. In addition, 1,100 refrigerator cars will be placed in service by American Refrigerator Transit Company (Missouri Pacific-Wabash subsidiary).
NEW CAR-BUILDING SHOPS
at De Soto, Mo., are in full operation, averaging 7 new cars daily. Scheduled to build 1,200 freight cars plus 200 refrigerators during remainder of this year.

FREIGHT PROGRESS

TRAIN RADIO

now completely installed in 15 locomotives and cabooses and 7 way stations between Alexandria, La., and McGehee, Ark., speeding train meets and switching moves along this busy freight-carrying division.

IMPROVEMENT PROGRAM

A $15,000,000 appropriation for capital improvements to property includes 320 miles of new, heavier rail, extensive grade revisions and curvature reductions, and continuation of Missouri Pacific's modern signaling program.

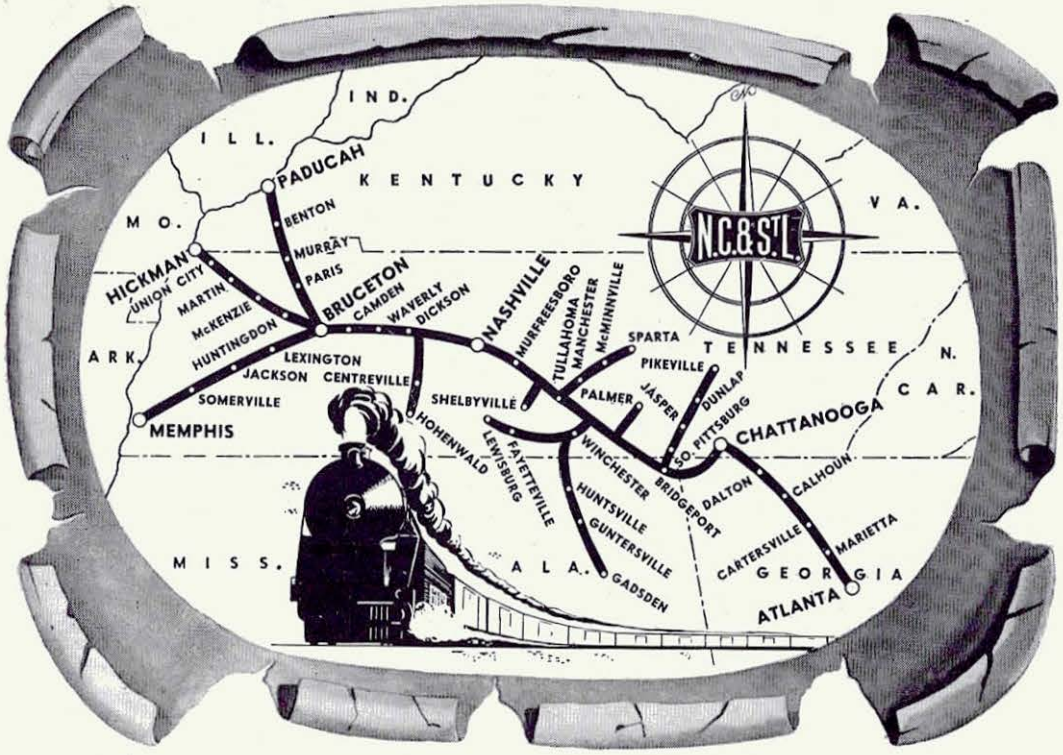
CLAIM PREVENTION

Every day a Perfect Shipping Day will continue to be the goal of Missouri Pacific's aggressive campaign to cut loss and damage claims by delivering freight OK as well as on time.

These are a few highlights in the Missouri Pacific's program of progress — they add up to more efficient, dependable and economical transportation service — the only true measure of railroad progress.

MISSOURI PACIFIC LINES

"A Service Institution"



Treasure Map... *Modern Style!*

"Gold is where you find it" . . . and this map of NC&StL territory is your guide to the gold mine of greater opportunities and profits in the new industrial South.

Select a plant site along the NC&StL and "cash in" on these industrial advantages:

Vast quantities of raw materials for all the needs of varied manufacture—minerals, forest and agricultural products.

A good supply of machine-skilled, intelligent, American-born labor.

A super-abundance of low cost electric power for efficient, year 'round operation.

Many excellent plant sites in made-to-order locations.

Add to these the helpful, dependable and efficient rail services of the NC&StL, providing quick and easy access to the nation's markets, and you will agree that this map of NC&StL territory is truly a modern treasure map.

For specific information about plant sites in NC&StL territory, write to J. A. Senter, General Development Agent, Nashville, Tennessee.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY N.C.&St.L.

FORGING AHEAD IN freight progress

To a railroad man or a shipper, the bare, factual record of Milwaukee Road additions and betterments during the past year forms an exciting history of achievement. Here are the chief steps in a program designed to produce notable improvements in freight service.

New Power and Cars

Eleven 1500 h.p. and five 1000 h.p. diesel-electric switching locomotives "went to work." 1454 forty and fifty-ton box and automobile cars were constructed at Milwaukee Shops and placed in service. 9174 more freight cars are scheduled for construction this year.

Track, Roadway and Signal Systems

207 miles of new rail laid on main track . . . 86,310 feet of new passing, yard and industrial track . . . 340 miles of automatic block system installed between Marmarth, N. D. and Harlowton, Mont., *giving the main line this form of protection all the way between Chicago and Tacoma.* Additions were made to interlocking plant and centralized traffic control systems . . . Five diesel operated freight trains equipped with radio communication systems.

Terminal, Yard and Station Facilities

New 60 x 580 ft. brick freight house completed at Goose Island, Chicago . . . new storage yard constructed at Port Washington Road, Milwaukee . . . facilities enlarged at Glendale Yard, Milwaukee, at Bensenville, Ill., and at Pig's Eye Yard, St. Paul. Diesel fuel storage tanks were installed at Othello, Wash., Aberdeen and Mitchell, S. D., and at Sparta, New Lisbon, Wausau and Minocqua, Wisc.

Behind this progressive building program are 38,000 loyal employes whose skill, experience and alertness help make The Milwaukee Road a leader in freight service.

M. H. McEwen, Western Traffic Manager, Seattle, Wash.

H. S. Zane, Freight Traffic Manager, Chicago, Ill.

P. H. Draver, General Freight Traffic Manager, Chicago, Ill.

THE MILWAUKEE ROAD

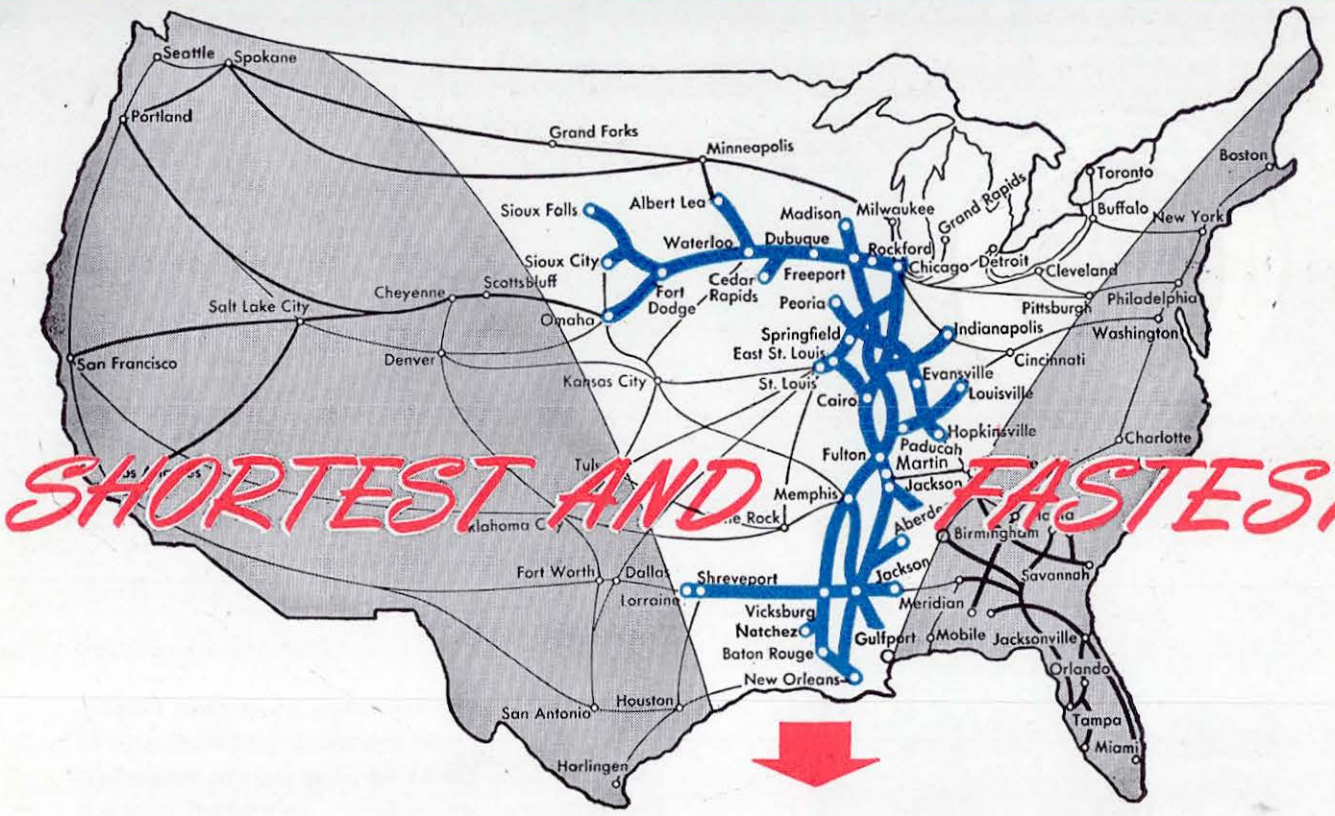
★ ★ FOREMOST IN FREIGHT SERVICE ★ ★

ILLINOIS CENT

NEW EQUIPMENT

In 1947 the Illinois Central placed in service 2,489 new freight cars. This year the railroad has on order 4,875 hopper cars, of which 375 already have been delivered. Another 1,500 box cars are being constructed in the Illinois Central's own shops with delivery to be completed by October. New mill-type gondola cars also are on order for delivery by September.

RAL RAILROAD



SHORTEST AND FASTEST

GREAT LAKES TO GULF

THROUGH SCHEDULES EAST AND WEST

DIRECT ROUTES MIDDLE WEST TO SOUTHEAST

NEW FREIGHT SERVICE

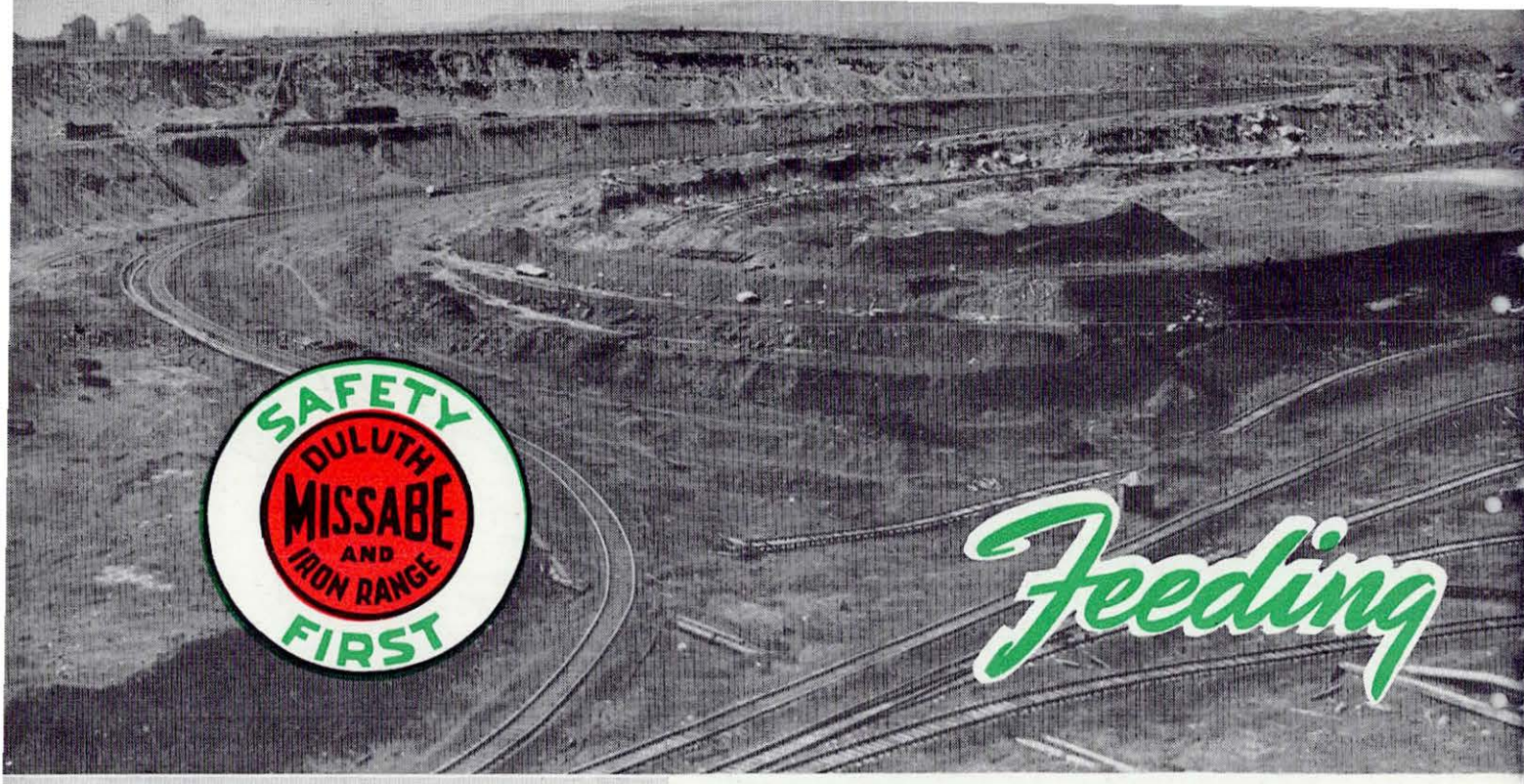
In 1947 three fast new freight trains were added to Illinois Central schedules. Time-saving adjustments were made on other freight schedules to provide faster service and to facilitate connections.

CC-2 Operating from Council Bluffs, Ia., to Chicago on a 24-hour schedule. Handles perishables from the west and other high-class loading.

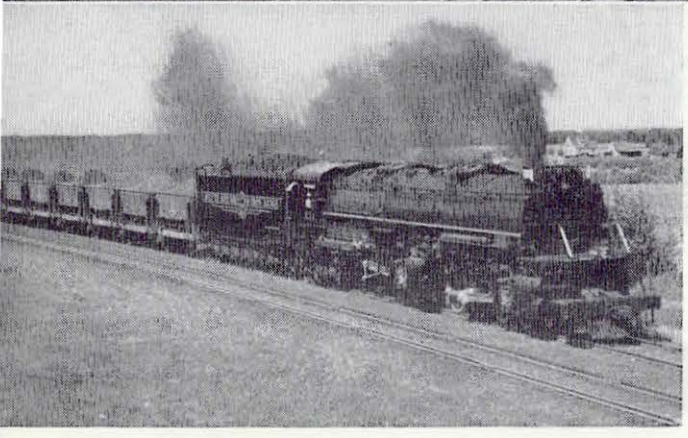
SN-3 Operating from East St. Louis to New Orleans. Saves a full business day at both New Orleans and Meridian, Miss. Seven hours faster to Jackson, Miss.

LM-1 Operating from Louisville to Memphis. Saves a day for traffic from the east to Memphis and intermediate points. Also saves a day to points between Memphis and New Orleans by connecting at Memphis with CN-1 from Chicago.

ILLINOIS CENTRAL



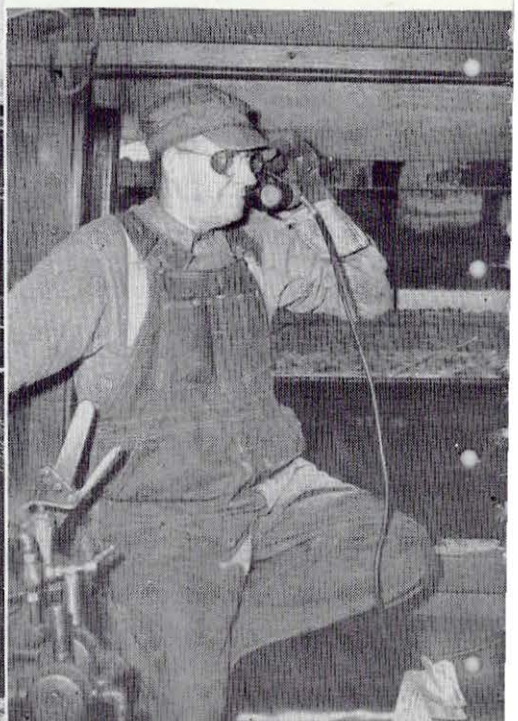
Feeding



FROM the iron-rich acres of remote Mesabi mines, moving the seasonal yield of ore to northern lake docks for dispatch to assimilating furnaces in modern industrial centers, is the specialized railroading job of the D. M. & I. R.

Above — One of the 140,000 lb. tractive effort Mallet-type locomotives moving a train load of ore from the large open-pit mine pictured at the top of the page to the Classification Yard at Proctor.

Left, below — Seventy-six miles of track in one of the D. M. & I. R. classification yards. Two thousand new steel hopper-type ore cars, each with 70-ton capacity, are recent additions to D. M. & I. R. equipment.



Industry's Steel Hunger

Above — One of the world's largest open-pit mines, served by the D. M. & I. R. Twenty-four hours a day during the Lake Superior shipping season the crude iron is shovelled into cars from the earth, hauled by mighty Mallet-type locomotives with 140,000 lbs. tractive effort, sorted by cars according to metallurgic content, untrapped by mechanical wrenches, and dumped through multiple chutes into the holds of lake boats for transport to the steel mills.

As the world's largest carrier of iron ore, it is challenged this year, by the serious shortage of vital steel, to move a greater peacetime tonnage than ever of steel's basic raw material.

Over trackage increased to a total of nearly 12 hundred miles, with augmented car capacity and improved facilities for safety and expedited operation, the D. M. & I. R. is endeavoring to achieve a record peacetime haul of ore in 1948.

Right — Fifteen tons of iron ore go into one "bite" of this electric shovel, which makes quick work of filling D. M. & I. R. ore cars.

Left — Inductive radio for train communication is now in use on both operating divisions of the D. M. & I. R., covering 600 miles of track, and linking 24 locomotives, 36 cabooses, and 14 wayside offices, to promote safer and faster performance.

The Road of the Rolling Ore

DULUTH, MISSABE & IRON RANGE RAILWAY

DULUTH 2, MINNESOTA

Looking for a new plant site?

Let our Industrial Department do the legwork for you!

If you are looking for a place to expand your business in the west, Texas or Louisiana, our Industrial Department can probably save you time and money.

Southern Pacific grew up with the eight states it serves. We can furnish you accurate, up-to-date information on all matters which might affect your choice of a site—such as water supply, power, transportation, labor, taxes, fuel, property availability and costs. We can, moreover, obtain this information without revealing your plans or identity.

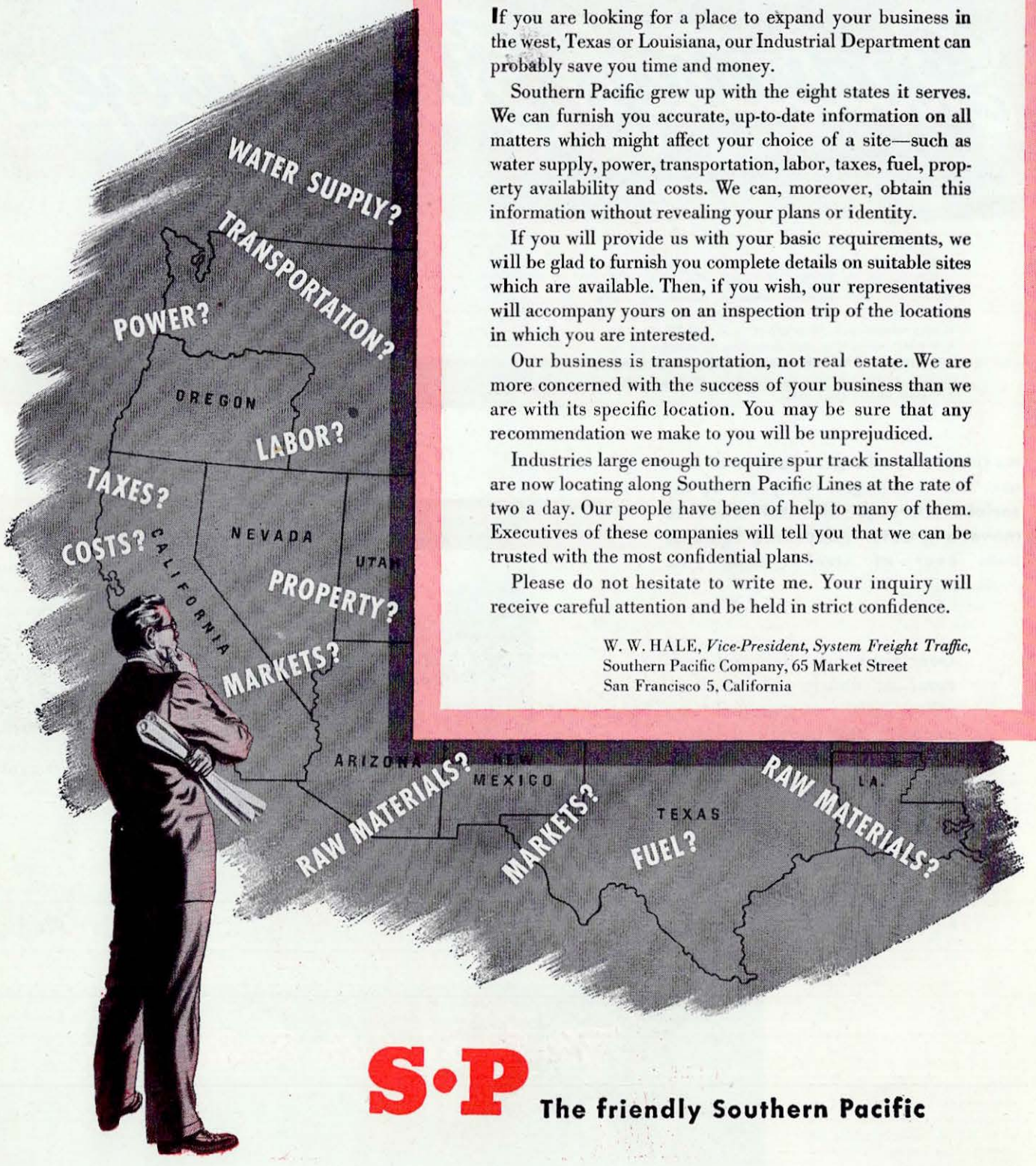
If you will provide us with your basic requirements, we will be glad to furnish you complete details on suitable sites which are available. Then, if you wish, our representatives will accompany yours on an inspection trip of the locations in which you are interested.

Our business is transportation, not real estate. We are more concerned with the success of your business than we are with its specific location. You may be sure that any recommendation we make to you will be unprejudiced.

Industries large enough to require spur track installations are now locating along Southern Pacific Lines at the rate of two a day. Our people have been of help to many of them. Executives of these companies will tell you that we can be trusted with the most confidential plans.

Please do not hesitate to write me. Your inquiry will receive careful attention and be held in strict confidence.

W. W. HALE, *Vice-President, System Freight Traffic,*
Southern Pacific Company, 65 Market Street
San Francisco 5, California



S·P The friendly Southern Pacific

GOOD NEWS FOR THE WEST!

251 MILES

of new freight cars and locomotives!

Brand new freight cars of latest design are moving steadily onto Southern Pacific rails. Although it will be some time before deliveries are sufficient to fully meet present enormous demands, we want you to know that we are doing everything in our power to speed the day when every western shipper will have as many freight cars as he wants, when and where he wants them.

Since the end of the war we have received 13,250 new freight cars and have ordered 15,750 more—a total of 29,000 freight cars of all types (including 8,100 refrigerator cars for Pacific Fruit Express—half-owned by Southern Pacific). We have also ordered 40 huge diesel-electric freight locomotives and 43 diesel-electric switch engines.

Coupled together, these 29,000 cars and 83 locomotives would make a solid train more than 251 miles long!

New passenger cars, too

New diesel-electric passenger locomotives and 107 new streamlined passenger cars are on the way, too. The new cars are for the *City of San Francisco* and *San Francisco Overland* between San Francisco and Chicago via Ogden; for new *Shasta Daylights* and *Cascades* between San Francisco and Portland; and for the *Golden State* between Los Angeles and Chicago.

This equipment (*over* $166,000,000 *worth*) is concrete evidence of Southern Pacific's faith in the West, and our determination to give this territory freight and passenger service second to none.

S·P The friendly Southern Pacific

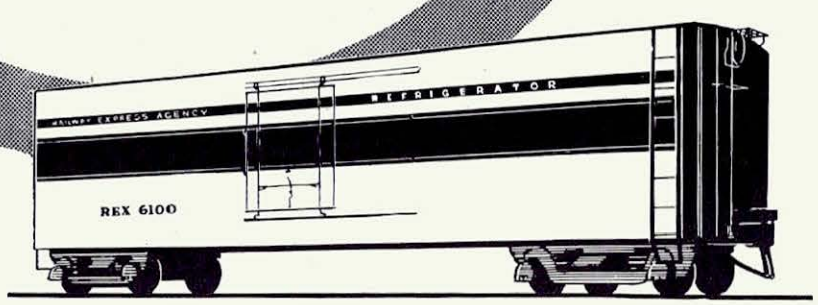
500 NEW HIGH SPEED EXPRESS REFRIGERATOR CARS FOR...

RAILWAY EXPRESS AGENCY

Transporting perishables of every kind is an important part of Railway Express Agency services. With 500 high-speed, passenger train-equipped Express Refrigerator Cars just off the assembly line, we'll be able to do this *better than ever.*

Known as the REX Silver Reefers, these cars carry many types of commodities requiring protection against spoilage. *They are also used for non-perishable traffic.* This means fruit and vegetable growers, for example, can utilize these cars to rush their products to market, while on the return trip the same cars can be loaded with manufactured goods of every description.

This new double-purpose equipment spells the kind of progress Railway Express is ever alert to offer its customers.



REX Silver Reefer REX 6100 TO 6599 INC.

RAILWAY EXPRESS AGENCY INC.

NATION-WIDE SERVICE

Making TIME

Time . . . essential element in today's economy . . . Competitive factor in the nation's commerce . . . Inevitable dimension of every freight shipment . . .

ELAPSED TIME **— Origin point to destination — assembly line to retail outlet — is the factor industry and commerce think about in terms of TRANSPORTATION . . . In short, the *Through Service*.**

Day in and day out . . . around the clock . . . in all kinds of weather . . . the Terminal Railroad Association of St. Louis is performing efficiently and dependably—in fact, is continually improving its prompt and reliable interchange and terminal switching service. Facts and figures show that the TRRA is shortening the *Elapsed Time* goods are in transit between producer and consumer.

60 Diesel switchers and 80 steam engines now owned by TRRA.

12 new Diesel switchers on order for delivery in 1949.

The Terminal's facilities include nearly 400 miles of track making direct connections with 25 line-haul and switching carriers and two barge lines—thirty team yards in the Greater St. Louis area, and connections with hundreds of industries maintaining private sidings.

Route via

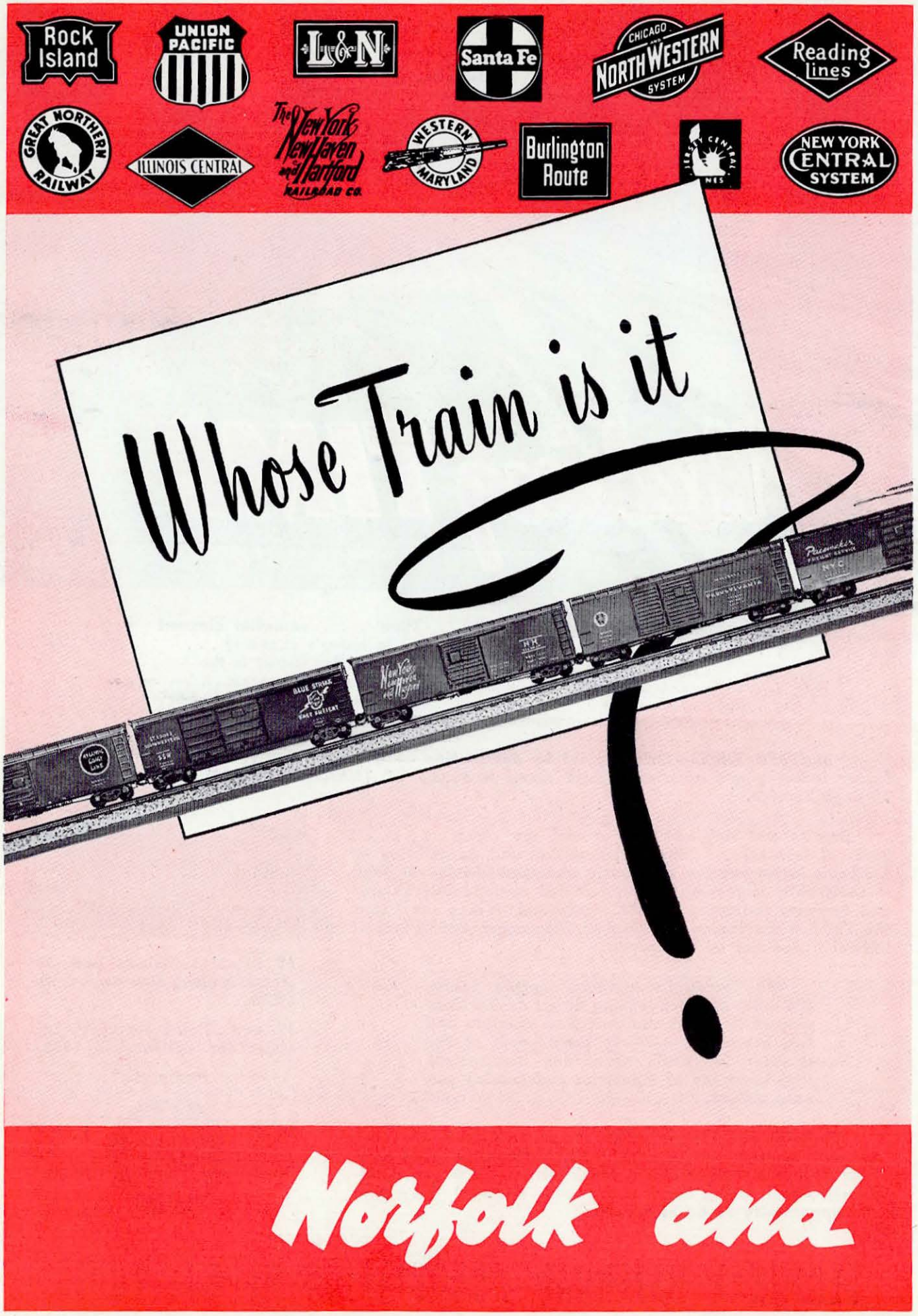
North **East**

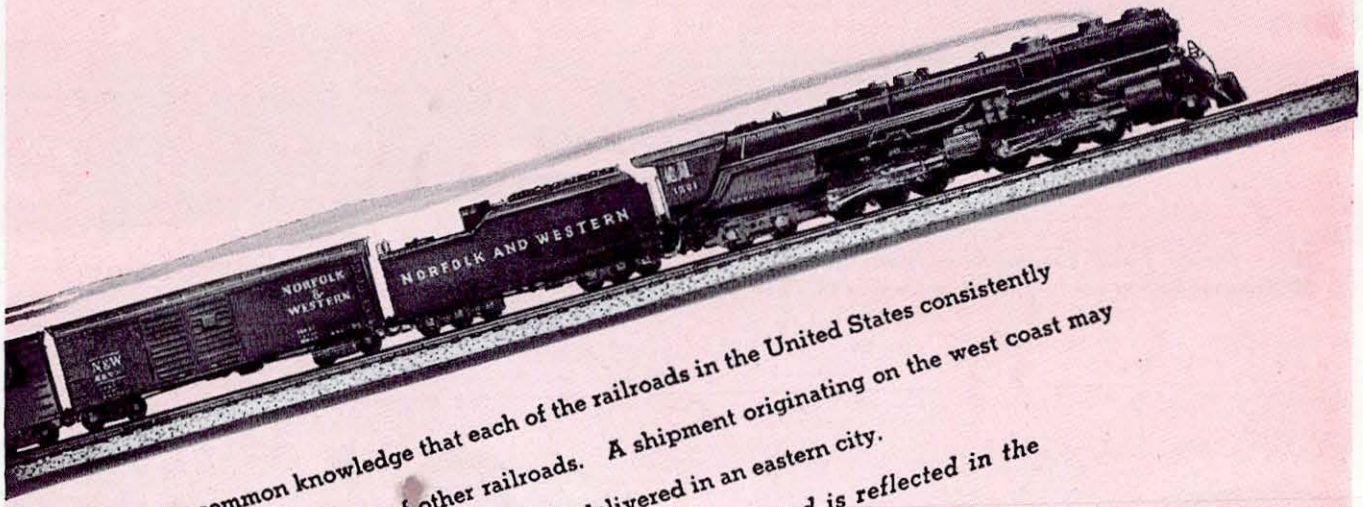
West **South**

Definite advantages attach to an industrial or commercial location on Terminal rails. Attractive sites are now available. Please get in touch with J. G. Dugan, Real Estate Agent, Union Station, St. Louis, Missouri. Give him the opportunity to be of service.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS

Specialized . . . Interchange and Industrial . . . Switching Service


Rock Island
UNION PACIFIC
L&N
Santa Fe
CHICAGO AND NORTH WESTERN SYSTEM
Reading lines
GREAT NORTHERN RAILWAY
ILLINOIS CENTRAL
The New York New Haven and Hartford RAILROAD CO.
WESTERN MARYLAND
Burlington Route
NEW YORK CENTRAL SYSTEM
Whose Train is it
!
Norfolk and



It's common knowledge that each of the railroads in the United States consistently requires use of the facilities of other railroads. A shipment originating on the west coast may travel over many different lines before it is delivered in an eastern city.

For this reason, the progress of any one railroad is reflected in the quality of railroad service all over the land.

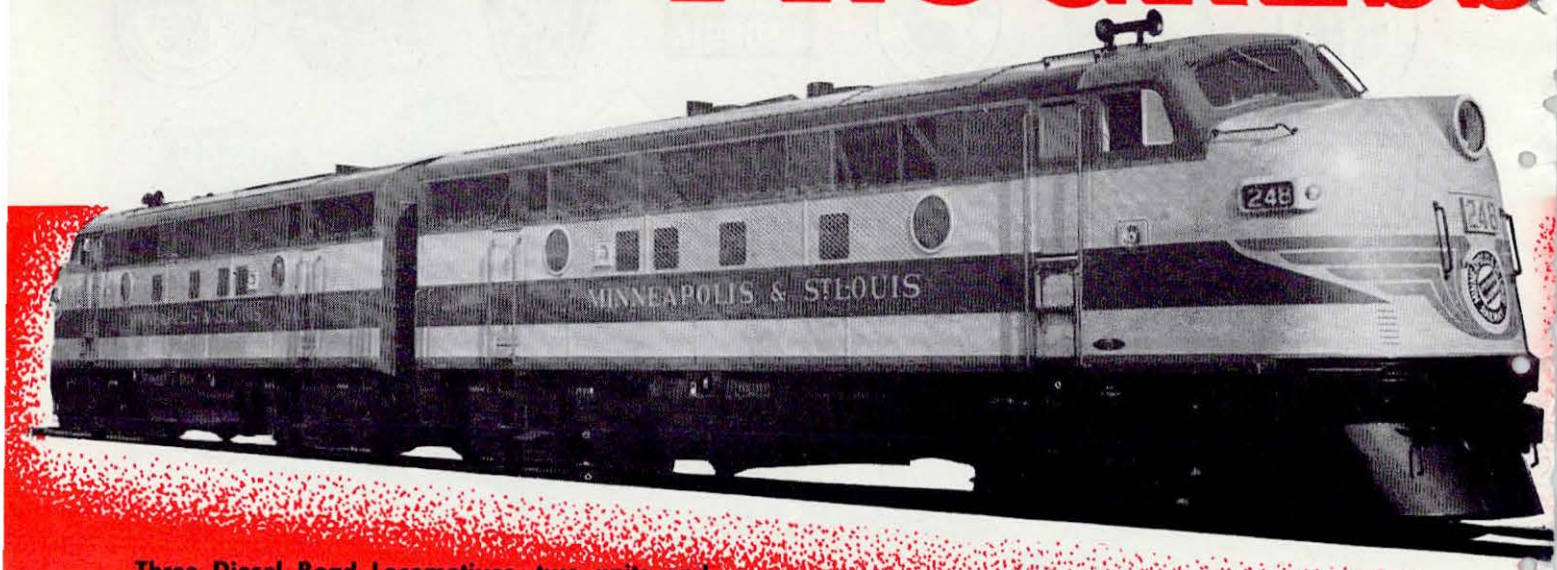
The N. & W. has recently completed, has underway, or in the blueprint stage, major improvement projects which will cost more than 50 million dollars. This huge sum is being spent "all over the line" to relocate and improve tracks . . . for new, modern ocean freight terminal facilities . . . new engine terminals . . . more modern signal facilities . . . new freight cars and locomotives . . . new offices . . . improved stations . . . *all* for a better railroad plant, greater safety and better railroad service.

These improvement dollars are a guarantee of continued *Precision Transportation* by the Norfolk and Western and — *because American railroads work together* — an important stride toward better overall American rail service.

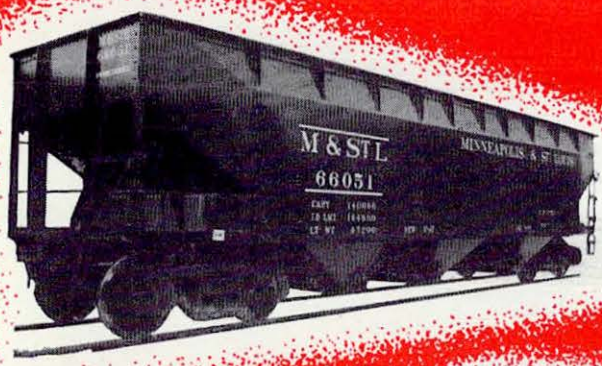
Western Railway

PRECISION TRANSPORTATION

NEW SIGNS OF PROGRESS



Three Diesel Road Locomotives, two units and 3000 horsepower each, placed in service in 1948.



Three hundred 70-ton Hopper Cars, acquired in 1947-48.

Four Diesel Road-and-Switching Locomotives, acquired in 1947-48.

Six hundred all-steel 50-ton Box Cars, placed in service in early 1948.

THE MINNEAPOLIS & ST. LOUIS RAILWAY CO.
THE PEORIA GATEWAY

The Minneapolis & St. Louis

TRAFFIC OFFICES IN 36 KEY CITIES • TELETYPEWRITER SERVICE AT ALL MAJOR OFFICES

ON THE Minneapolis & St. Louis Railway

Rolling today on the M. & St. L. are 1150 new Freight Cars and seven Diesel Locomotives, all acquired during the past year as the latest symbols of constant progress in improvement of equipment and service on this key midwestern railway.

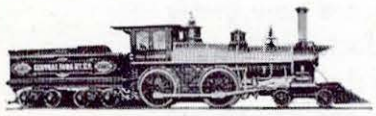
Since reorganization on December 1, 1943, ended the 20-year receivership of the M. & St. L., the road has purchased 30 Diesel Locomotives and 2,442 new Freight cars.

This modern rolling stock, operated on heavy-duty tracks, is helping the progressive M. & St. L. to maintain its 77-years reputation for Fast, Dependable Service

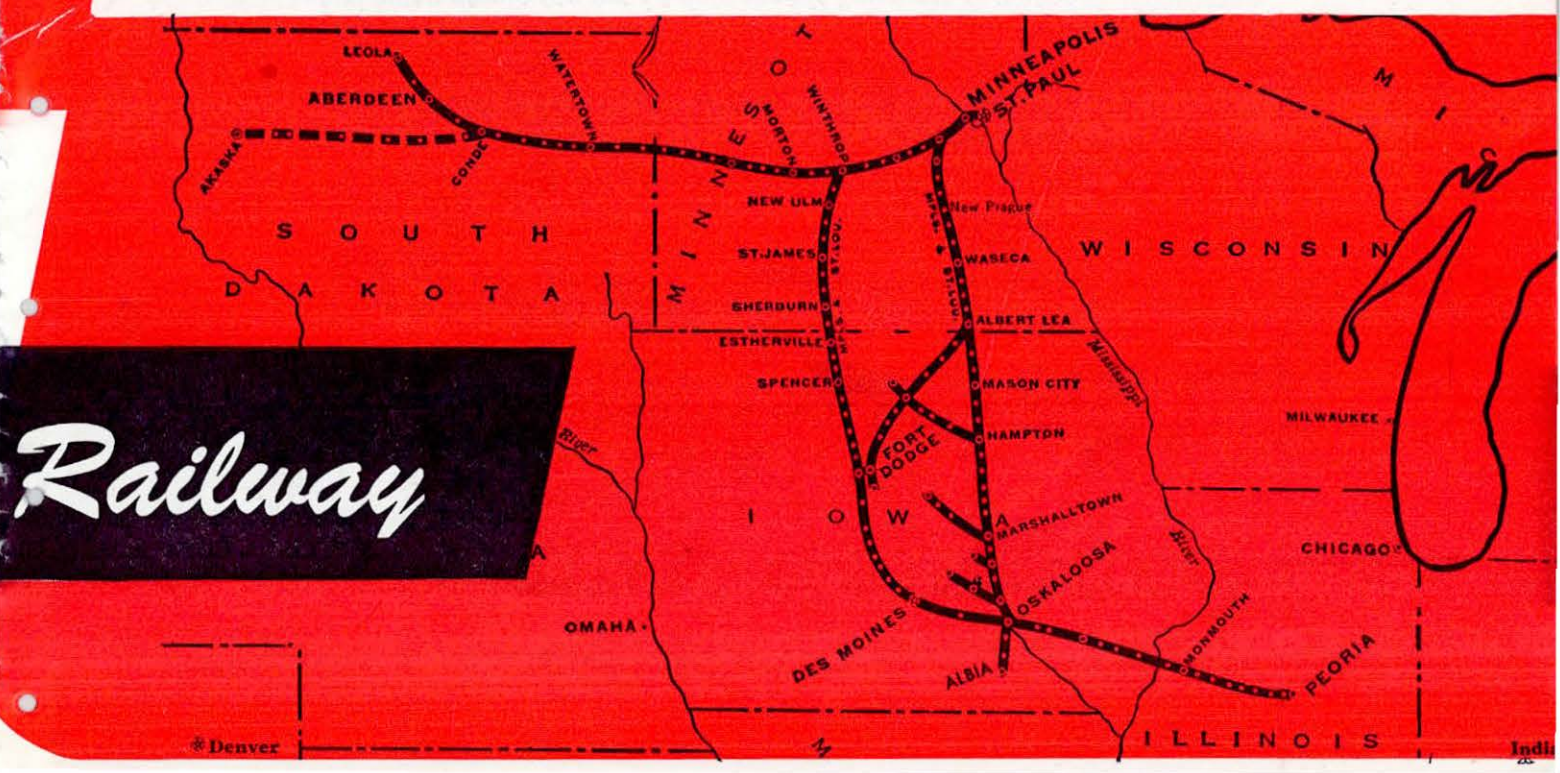
To Shippers and Receivers of Freight

To Agriculture and Industry in the Midwest

And, via Peoria and other Traffic Gateways, to Connecting Railroads.



Evolution in M. & St. L. motive power is shown strikingly by this picture of a good old American-type engine, standard equipment sixty years ago.



Railway

BETTER FACILITIES *Throughout* FOR SEABOARD SHIPPERS!

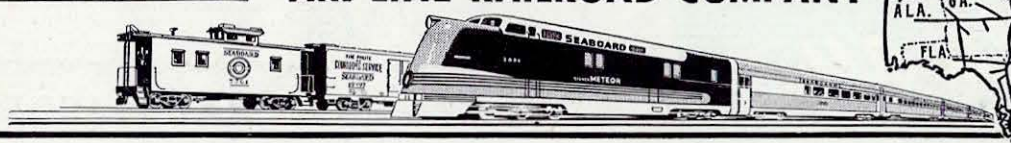
Seaboard's continuing program of system-wide improvements over 4,152 miles of *modern* railroad is of vital concern to you as a shipper.

In 1947 we added 240 miles more of up-to-the-minute roadway signals when we completed installation of automatic signaling equipment between Hamlet, N. C. and Savannah, Ga. Additional installations are now under way elsewhere over our system. Our new Diesel shop at Jacksonville provides efficient maintenance for our constantly expanding Diesel motive power. Radio communications now accelerate Seaboard yard operations, and freight interchange procedures are being speeded up by the use of automatic photographic machines.

These are only some of the many factual evidences of Seaboard progress . . . of our determination to provide for your specialized shipping requirements, today—and tomorrow.

"World Trade Makes Good Neighbors"
WORLD TRADE WEEK
May 16-22, 1948

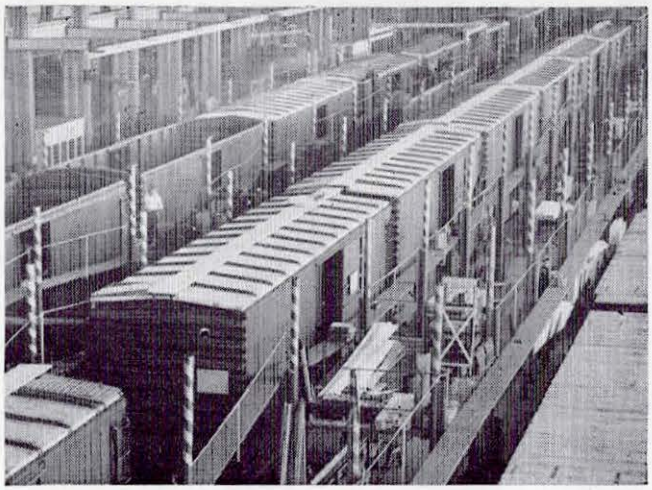
SEABOARD
AIR LINE RAILROAD COMPANY



THE ROUTE OF COURTEOUS SERVICE

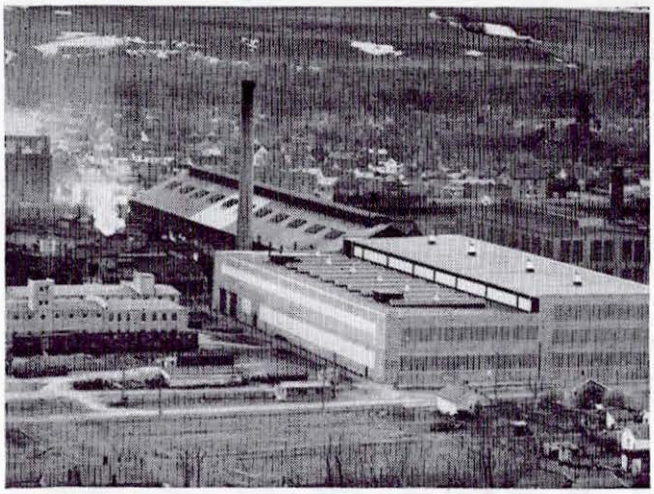
$23,515,000 STORY...

telling how Northern Pacific spent $23,515,000 in 1947 to improve its service and equipment.



$7,475,000 bought freight cars and power—500 all-steel boxcars (of 1,000 we're building at our Brainerd, Minn., shops), 250 all-steel refrigerator cars, and a fleet of 6,000-horsepower freight diesel locomotives.

$8,556,000 was spent on our roadbed to provide better freight and passenger service. This included laying 30,000 tons of heavier rail, putting down 1,000,000 yards of new ballast, reducing or eliminating curves.



$2,238,000 went into NP plant additions, to keep our equipment—all along the Main Street of the Northwest—in the pink of condition. A diesel shop, a freight house, a power plant were completed; other plant facilities were underway.

$5,246,000 was invested by NP last year in new, streamlined passenger equipment for the **NORTH COAST LIMITED** — new 4,500-horsepower diesels, new coach buffet-lounge cars, new diner-lunch cars, new head-end cars—*all* now in service.

THIS STORY'S *STILL* NOT FINISHED for we couldn't get all the equipment we had on order, couldn't complete all our planned plant and main-line improvements and additions. That's why we've earmarked $18,490,000 more to continue the Northern Pacific progress story in 1948!

NORTHERN PACIFIC RAILWAY

Main Street of the Northwest

CHICAGO AND NORTH WESTERN SYSTEM

In observing the accomplishments of a century, from a modest beginning in 1848 as the first railroad to operate out of Chicago, to maturity as one of the nation's leading mid-western carriers, the Chicago and North Western System can look upon an impressive series of pioneer undertakings in the development of safety, service, and operating efficiency which validates its title of "Pioneer Railroad of Chicago and the West," and which portends future leadership in the transportation field.

pioneering years

CHICAGO and NORTH WESTERN SYSTEM

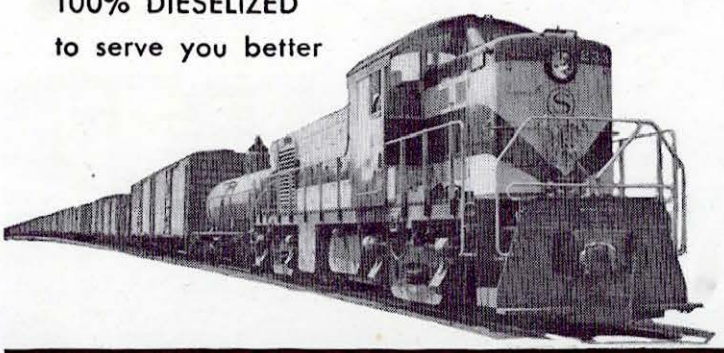
9,600 MILES OF SERVICE TO SHIPPERS

YOU COULDN'T PICK A BETTER SPOT FOR YOUR PLANT

Than on the

SUSQUEHANNA

100% DIESELIZED
to serve you better



An impressive number of manufacturing industries have located at Edgewater, N. J., and other points on Susquehanna lines. The close proximity to markets and raw materials and facilities for receipt and dispatch of sea cargoes are but a few of the reasons governing their choice. An important consideration was—and will be for you too—the splendid connecting service afforded by the Susquehanna. A small road but a progressive one, it has up-to-date Diesel equipment and plenty of it. Your freight gets in and out on time.

Choice locations are still available. Your inquiries will receive prompt attention.

NEW YORK, SUSQUEHANNA AND WESTERN RAILROAD

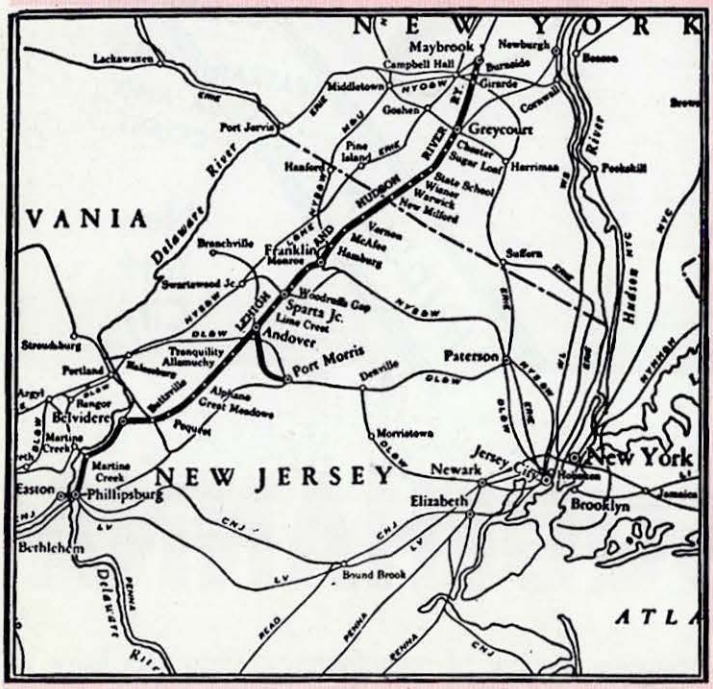
HENRY K. NORTON, TRUSTEE

140 Cedar Street, New York 6, N. Y.

LEHIGH AND HUDSON RIVER

WISE SHIPPERS USE THE FASTER, MORE EFFICIENT SHORT CUT

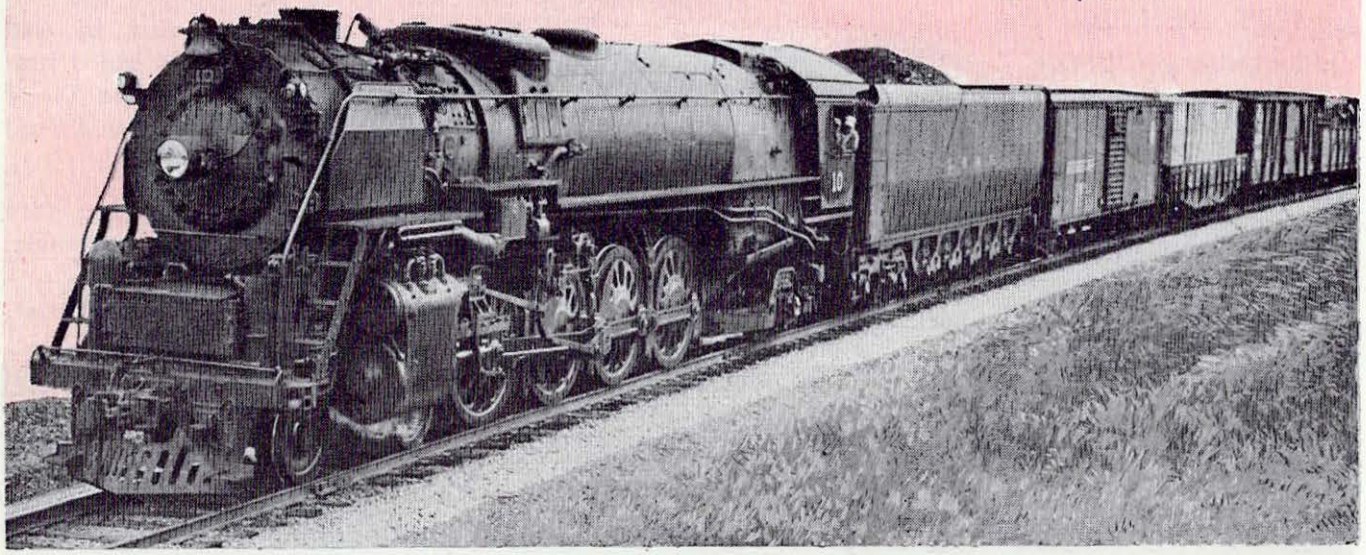
Between Industrial Pennsylvania, the West, the Southwest and New England



MODERN motive power and improved road bed are responsible for reduced schedules on all through freight routed over the Lehigh and Hudson River Railway. This favorite short cut links the strategic steel, coal and industrial areas of Pennsylvania, the west and the southwest with New England, providing an efficient and closely coordinated service via this short All Freight Route between 5 important East-West and New England Lines.

THE LEHIGH AND HUDSON RIVER RAILWAY COMPANY

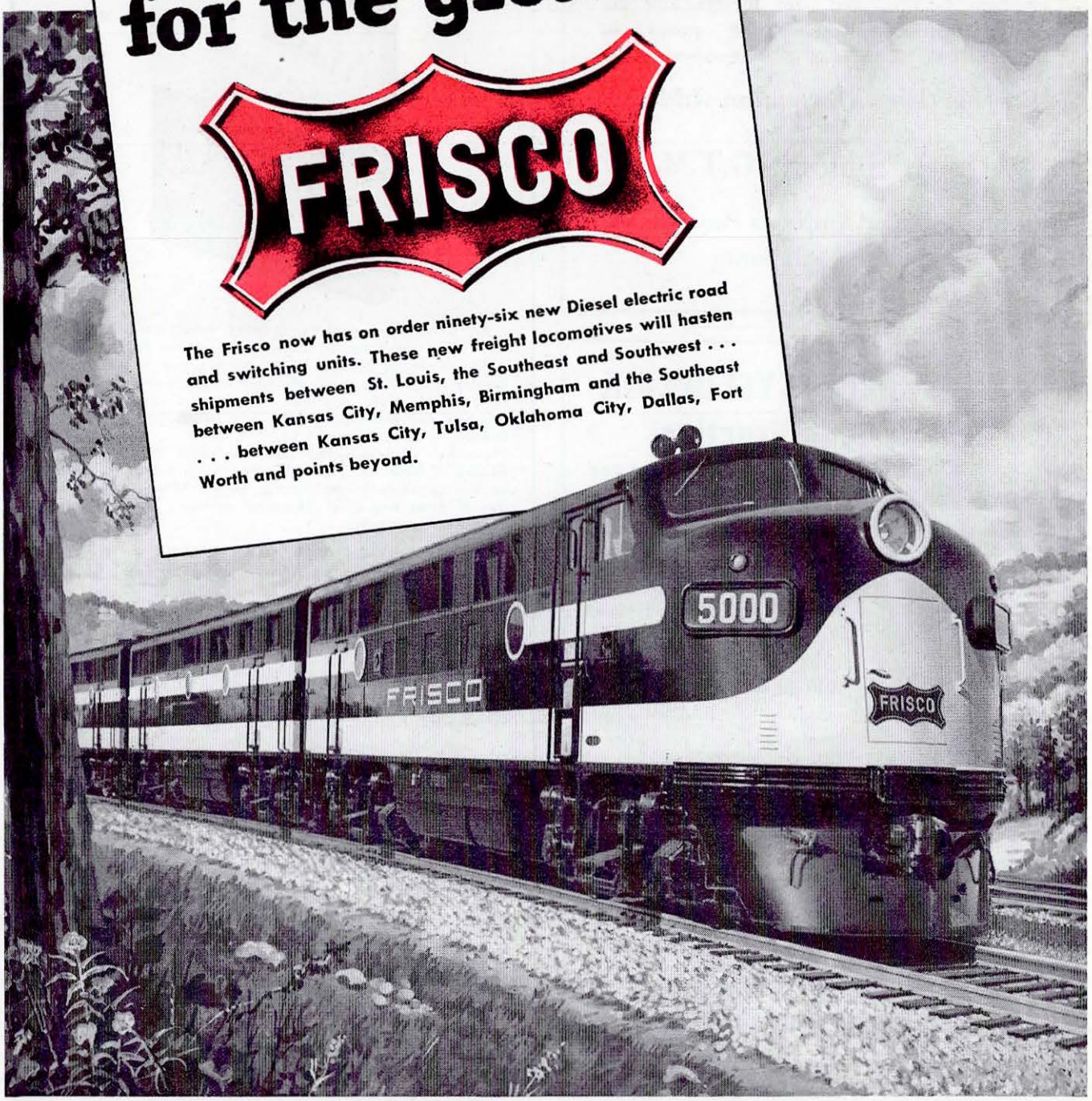
Warwick, N. Y.



DIESEL POWER

for the greater FRISCO

The Frisco now has on order ninety-six new Diesel electric road and switching units. These new freight locomotives will hasten shipments between St. Louis, the Southeast and Southwest . . . between Kansas City, Memphis, Birmingham and the Southeast . . . between Kansas City, Tulsa, Oklahoma City, Dallas, Fort Worth and points beyond.



Industrial Sites
ON
The Bay Line

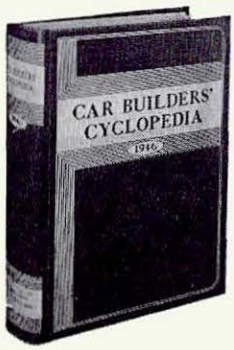
Especially attractive industrial sites are available at several places on The Bay Line. Practically unlimited quantities of soft, fresh water; timber for plants manufacturing newsprint or Kraft paper, pulpboard, veneering, plastics or any other products of the forest; excellent facilities for both foreign and domestic distribution. Unlimited power at lowest rates. Abundance of native-born help.

For Further Information Address

H. H. SIMMS, G.T.M.

Atlanta & Saint Andrews Bay Railway
Dothan, Alabama

CAR BUILDERS' CYCLOPEDIA of American Practice



Editor, ROY V. WRIGHT
Editor, Railway Mechanical Engineer

Since 1879 this book has been recognized as the standard authority wherever American built rolling stock is in use. The Seventeenth Edition was thoroughly revised.

Twenty-One Sections

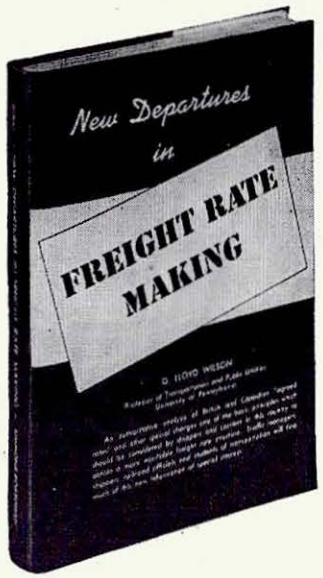
Dictionary of Car Terms—Freight Train Cars—Freight Car Construction—Railway Service Cars—Passenger Train Cars—Motor Cars and Trains—Passenger Car Construction and Equipment—Lighting and Air Conditioning—Heating and Ventilation—Couplers and Draft Gears—Air Brakes—Brake Gear—Safety Appliances—Car Trucks—Journal Boxes; Roller Bearings; Lubrication—Industrial and Mine Cars—Export Cars—Car Materials and Supplies—Car Operation—Car Shops and Repair Yards—Indexes. 1946. 17th. 1,444 pages, 3,000 illus., 8x12, Fabrikoid, $6.00

Send for Your Copy Today

SIMMONS-BOARDMAN PUBLISHING CORP.
30 Church Street **New York 7, N. Y.**

New Departures in FREIGHT RATE MAKING

By G. Lloyd Wilson
Professor of Transportation and Public Utilities, University of Pennsylvania



An authoritative analysis of British and Canadian "agreed rates" and other special charges and of the basic principles which should be considered by shippers and carriers in this country to obtain a more equitable freight rate structure. Railroad officials, traffic managers, shippers and students of transportation will find much of this new information of particular interest.

The author is a recognied expert on rates. He has written a number of books dealing with rate making and is a consultant on rate problems. During the war he was Director of the Division of Rates and Chief Consultant on Rates of the Office of Defense Transportation.

CHAPTER HEADINGS

Freight Rates: Types and Structures—Contract or Agreed Freight Charges—Agreed Charges in Great Britain—Flat or Agreed Freight Rates of British Railways for Government Departments—Agreed Charges of Canadian Railways—Agreed Charges from the Viewpoint of Canadian Shippers—Rate Quotations Under Section 22 of the Interstate Commerce Act—Rates Conditioned Upon Periodic Volume of Traffic—Multiple-Carload-Lot Freight Rates—Some New Departures in Freight Rate Making: Some Tentative Conclusions. Selected Bibliography.

1948. 160 pages, tables, 6 x 9, index cloth, $3.00

FREE EXAMINATION ORDER FORM

SIMMONS-BOARDMAN PUBLISHING CORPORATION
30 Church Street, New York 7, N. Y.

Please send me on Ten Days' Free Examination a copy of NEW DEPARTURES IN FREIGHT RATE MAKING by Dr. G. Lloyd Wilson. If not entinrely satisfied I will mail the book back without obligation. Otherwise I will remit the list price of $3.00.

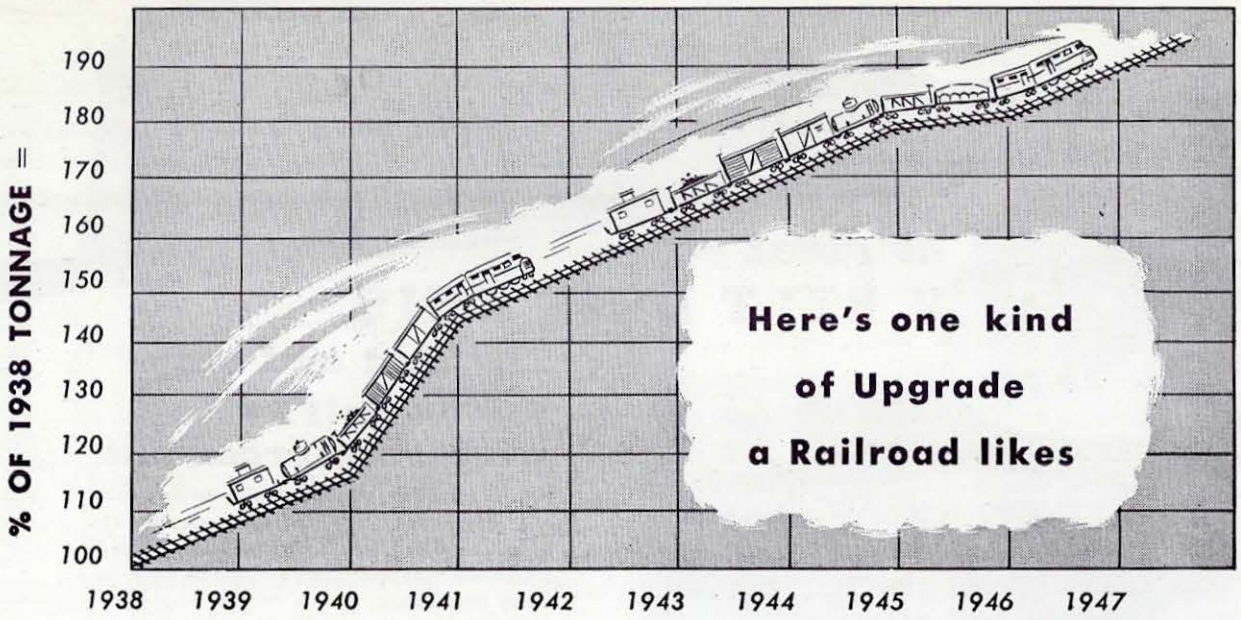
Name .....

Address .....

City ..... Zone ..... State .....

Company ..... Position .....

(This offer is limited to retail customers in the United States and Canada) R. A.—48.



Tonnage figures on the Maine Central have been steadily on the upgrade for the last 10 years, with 1947 showing 80% *more* freight carried than in 1938. Maine Central knows how to handle your shipments swiftly, efficiently and economically. For best service . . . for assurance of on-time delivery . . . ship via Maine Central.

MAINE CENTRAL
RAILROAD

These rails make direct connections with 14 trunk lines serving 38 states 24 hours a day.

That's why P. & P. U. interchange service gives shippers outstanding advantages in avoiding the increasing congestion of metropolitan terminal areas.

Over 66 years' experience has perfected P. & P. U. expertness at speedy operations and wide-awake care for every detail of rail freight handling.

New Diesel switching locomotives, new electric switches centrally controlled are in use, new service features are constantly being added, to give every shipment through the Peoria Gateway via P. & P. U. quick transfer in safe condition.

One of the four P. & P. U. classification yards.

LOOK! NEW . . .

Sites for industrial locations along P. & P. U. tracks furnish a wide choice of rail facilities in all directions. The 14 trunk lines directly serving 38 states and indirectly all 48, put the P. & P. U. tracks which connect with them in a favorable position of access to the ports, resources, and markets of the nation.

Since P. & P. U. switching charges are absorbed by the road-haul carriers, plants located on the P. & P. U. tracks have a 14-fold shipping advantage at the Peoria crossroads, with the added benefits of dependable fuel, power, and water supplies, moderate taxes, and prosperous adjacent communities. Look here, and ask us for complete details.

PEORIA and PEKIN UNION RAILWAY COMPANY

E. F. STOCK, General Traffic Manager, ROOM 36, UNION STATION, PEORIA 2, ILLINOIS

No other
V BELT LIKE THIS

The first and only grommet-type wire reinforcement

THIS new belt, reinforced with endless wire grommets, transmits more horsepower for a given size of belt. It will solve problems created by difficult old applications and will be useful in many new ones.

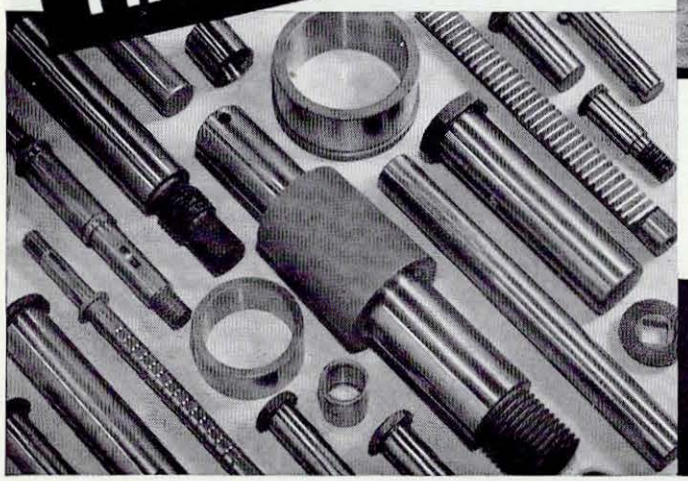
This new principle makes the strongest V belt ever produced in proportion to size and weight. The well-known V Belt advantages of efficient power transmission, low maintenance, long trouble-free life, quiet and clean drives, less weight are now available for many drives which have always had to put up with heavier, costlier methods.

The wire grommet, spirally wound in one direction, is covered by cord spirally wound in the other direction. Thus each grommet is balanced—and each belt is balanced.

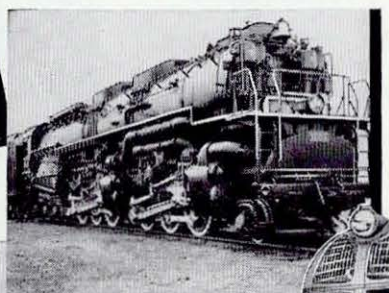
Strongest V belt ever made

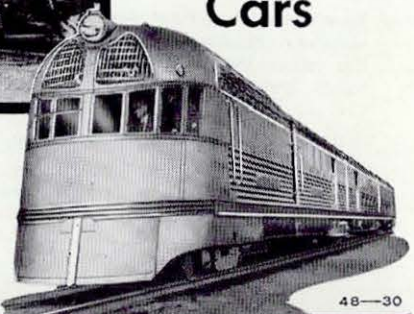
CHICAGO RAILROAD SUPPLY CO. 215 WEST OHIO STREET CHICAGO 10, ILLINOIS

Specify
EX-CELL-O
Hardened and Ground Steel
PINS and BUSHINGS



for Diesel and Steam Locomotives and Tenders . . . and Passenger and Freight Cars



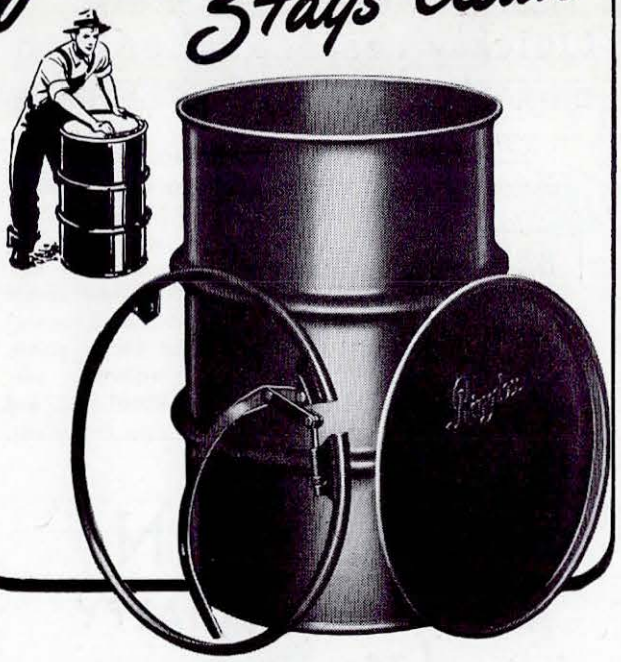


XLO
EX-CELL-O *for* PRECISION

48—30

Railroad Division
EX-CELL-O CORPORATION
Detroit 6, Michigan

Journal Packing Stays Clean



in The NILES
RINGLOX Vacuum-Tight DOPE DRUM

● That's the way journal packing should be—free from dirt, dust, water, and other foreign matter—and that's the way it always stays in the NILES Dope Drum.

The patented Ringlox closure is vacuum-tight—easy to open—easy to close. A take-up bolt compensates for wear and shrinkage—insures a tight closure throughout the years of service in the storage and shipment of journal packing. Write for details.

★ ★ ★

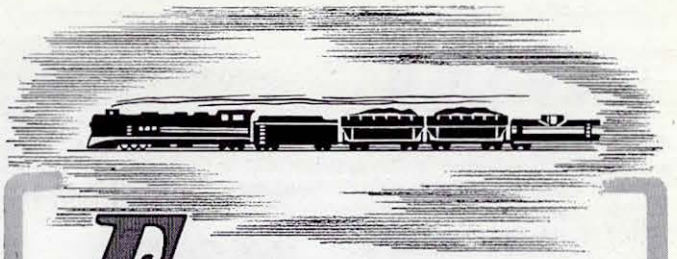
Just push the handle to open—or pull it to close. No tools required with the NILES Ringlox Vacuum-Tight Drum.

NILES STEEL PRODUCTS DIVISION
REPUBLIC STEEL CORPORATION
NILES, OHIO

REPUBLIC STEEL

NILES

METAL BARRELS AND DRUMS

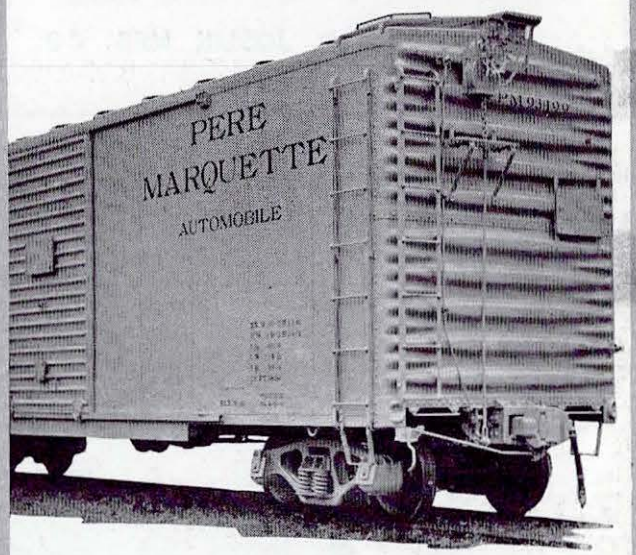


Extra Stamina

built into

RALSTON
Freight Cars

is the road-proven reason for their dependable service record



The greater margins of
Efficiency and Economy
are long-term results of
Ralston's pioneering leadership
and 42 years' experience
in straight-line production of
railroad freight cars

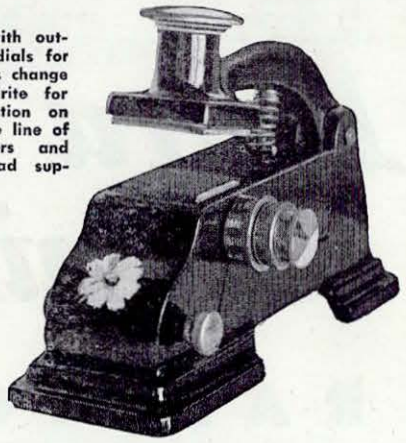
RALSTON
STEEL CAR COMPANY
Columbus 16, Ohio

BUILDERS OF FREIGHT EQUIPMENT AND REPAIR PARTS

COSMO

TICKET DATER

Model 3, with outside index dials for instantaneous change in date. Write for full information on our complete line of Ticket Daters and other railroad supplies.

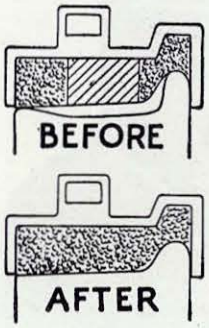


The GUARANTEE that goes with every COSMO Ticket Dater is based on more than 15 years of specialized manufacturing experience. Sturdy materials and accuracy in every mechanical detail make COSMO Ticket Daters the most reliable on the market.

A. D. JOSLIN MFG. CO.
MANISTEE, MICHIGAN

DEARBORN WHEEL GRINDING BRAKE SHOES

Quickly restore wheels to original contour while in service



A WHEEL CONTROL SERVICE you cannot afford to miss. DEARBORN WHEEL GRINDING BRAKE SHOES do a complete wheel or tire grinding operation while car or locomotive continues in service. Each order custom designed to suit individual requirements. In successful use on steam, Diesel, and electric locomotives, passenger and freight rolling stock, and street railway cars. Write for circular.

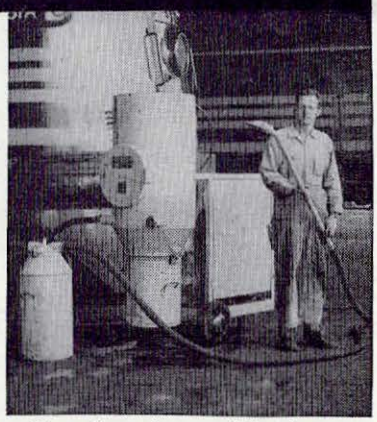
DEARBORN RAILWAY SPECIALTY Company

13011 FORD ROAD DEARBORN, MICHIGAN

HOUSE-CLEANING DIESELS THE NEW EASY WAY

EXIDUST PORTABLE VACUUM CLEANER

—is doing a thorough cleaning job in the Diesel shop of the Denver & Rio Grande Western.



The smaller cleaner (illustrated) picks up dust, dirt and accumulations of water and oil.

Removes dust caused by stoning of the main generator and tractor-motor commutators.

Removes solutions and residues from inaccessible places which must be scrubbed. For example, the main generator sump and the Vee between the engine cylinders.

Cleans soot out of steam generators and accumulations of dirt from dynamic braking and other resistor grids.

Has many general cleaning uses in the shop itself.

Reduce Maintenance Troubles
Keep your Diesels in Better Condition

Exidust is equipped with a 20-gal. water separator which removes liquids from the air stream before air reaches the dirt collector. Produces a 6" mercury vacuum with an air volume of 280 cu-ft. per minute. Long air hose, with different nozzle attachments, reaches most of the hard-to-get-at places. Does a quick, thorough cleaning job.

WRITE TODAY FOR FREE EXIDUST BULLETIN

ALLEN-BILLMYER DIVISION
LAMSON CORPORATION
475 LAMSON STREET SYRACUSE, NEW YORK

STOP!

Losses of— Food—Grain and Other Products

KENNEDY CAR LINERS

GUARD SHIPMENTS AGAINST DAMAGES • LEAKAGES • SHORTAGES

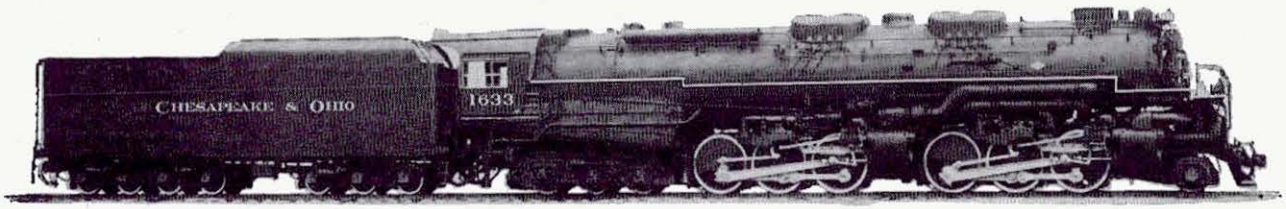
● Kennedy Car Liners are especially indicated for bulk loaded cars of grain, sulphates, sand and all granular substances. Quick and easy to install—reinforced for added strength—Kennedy Liners are *Low in Cost—High in Protection.* Kennedy also makes *ceiling liners, end liners, door liners*—for all standard cars.

KENNEDY CAR LINER & BAG CO., INC.
SHELBYVILLE, INDIANA
CANADIAN PLANT • WOODSTOCK, ONT.

BAKER
LOCOMOTIVE VALVE GEAR

SPECIFIED ON

15 New C. & O. Mallets and 30 Switchers



Over 14,000 in Service

Over 1500 Equipped with MULTIROL BEARINGS

THE PILLIOD COMPANY

SWANTON, OHIO

30 Church Street, New York 7, N. Y. 332 So. Michigan Ave., Chicago 4, Illinois

ALUMILASTIC

THE ELASTIC METALLIC COMPOUND

TRADE MARK

WILL THOROUGHLY SEAL THE FAYING SURFACES OF BOLTED, RIVETED, OR SPOT WELDED LAPPED JOINTS AGAINST LEAKAGE AND THE ENTRAPMENT OF CORROSION PRODUCING MOISTURE.

THE PARR PAINT & COLOR COMPANY CLEVELAND 10, OHIO

ANGELINA COUNTY LUMBER COMPANY

Southern Pine and Hardwoods

- KILN DRIED CAR SIDING AND DECKING
- TIMBERS AND GENERAL MAINTENANCE LUMBER

General Sales Office — Keltys, Texas

HYDREX Waterproofing Felt

"The Membrane Method Of Waterproofing"

- ASPHALT COMPOUNDS
- ASPHALT EMULSIONS
- FOUNDATION CEMENTS

Hydrex Felt & Asphalt Products Co.
Box 204, Lyndhurst, N. J.

WEBSTER ELECTRIC

Telespatch

Here's

the Fastest Way

to give instructions to a yard crew

Trains can be moved faster in classification yards by voice instruction. Yard crews and yard clerks can be given verbal instructions, or instructions can be changed in a few seconds by using a "Telespatch" system. A central unit in the tower can have instant contact with any part of the yard where speakers are located. Yard crews can reply, and call in for orders.

Superintendents of yards now using "Telespatch" have the greatest praise for its efficiency and economy. One superintendent states, "With the aid of 'Telespatch', trains are classified and moved faster; hence tracks are made available with greater dispatch which permits inbound trains to enter without being held back."

If you are not already using "Telespatch", it will pay you to have a Webster Electric distributor call. You'll find them listed in the classified section of your phone book.

Licensed under U. S. Patents of Western Electric Company, Incorporated, and American Telephone and Telegraph Company

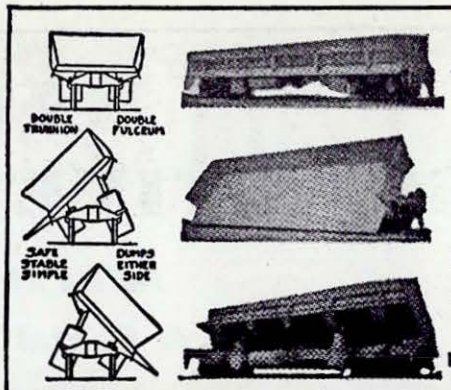
WEBSTER ELECTRIC

RACINE WISCONSIN

Established 1909

Export Dept. 13 E. 40th St., New York (16), N.Y. Cable Address "ARLAB" New York City

"Where Quality is a Responsibility and Fair Dealing an Obligation"



AIR DUMP CARS

RAIL CARS
MINE CARS
AND
LOCOMOTIVES
AXLESS TRAINS

COMPLETE HAULAGE SYSTEMS

DIFFERENTIAL STEEL CAR CO.
FINDLAY, OHIO

TAKE ADVANTAGE
OF SPACE
IN THE
GET TOGETHER
DEPARTMENT

Now Ready

WHO'S WHO IN RAILROADING

in North America

The Eleventh Edition of this standard authority on railroad officials has been brought up to date since the last edition. More than 3,000 of the biographical sketches have been revised and 2,000 new ones added.

Railway officers, officials of railway equipment companies, members of federal and state regulatory commissions, Interstate Commerce Commission practitioners, transportation economists, professors of transportation, editors of railroad magazine and leaders of railroad unions are included. Much personal information in addition to the highlights of their business or professional careers, is given.

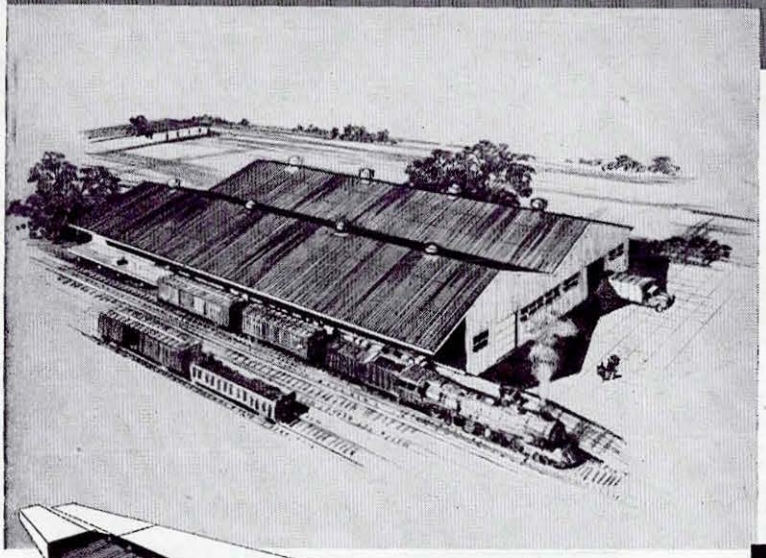
11th. 780 pages, 6 x 9, cloth, $8.50.

Book Department

SIMMONS-BOARDMAN PUBLISHING CORPORATION

30 Church Street **New York 7, N. Y.**

LURIA Industrial Buildings



NOW AVAILABLE!

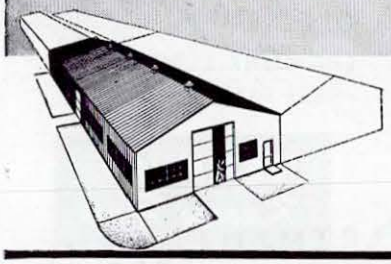
Luria offers a complete line of Standard Buildings specifically planned to be adaptable for all industrial requirements. Several basic types in a wide range of sizes can be used individually or in a variety of combinations.

Luria buildings are permanent structures fabricated from heavy structural steel and designed to comply with the latest building codes.

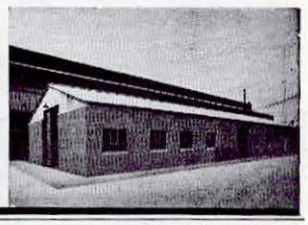
A choice in the use of collateral materials and the location and type of doors and windows increases the utility and allows complete freedom in architectural treatment.

LURIA ENGINEERING CORPORATION

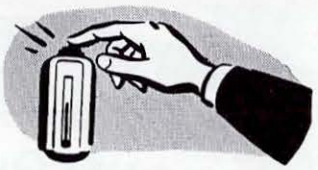
500 Fifth Avenue, New York 18, N. Y.
1734 Candler Bldg., Atlanta 3, Ga. • First National Bank Bldg., Chicago 3, Ill.
Chamber of Commerce Bldg., Boston 10, Mass. • Fidelity Philadelphia Trust Bldg. Phila. 9, Pa.



- UNIT WIDTHS 40′ TO 100′
- LENGTH ADJUSTABLE IN INCREMENTS OF 20′
- CLEARANCE AT EAVES 12′ TO 20′



it's Cool!



Every room has adjustable air conditioning. Just turn controls in your room to the temperature *you* want.

it's Quiet!

Every room has noiseproofing. No outside noises to annoy you. Work, rest and sleep in comfort.

it's Homey!

Every room has a radio. No extra charge. Plus a good bed. And a private bath.

it's the Hotel Mayfair ST. LOUIS

8th and St. Charles
ROOMS FROM $3.50

EDWARD DON & COMPANY

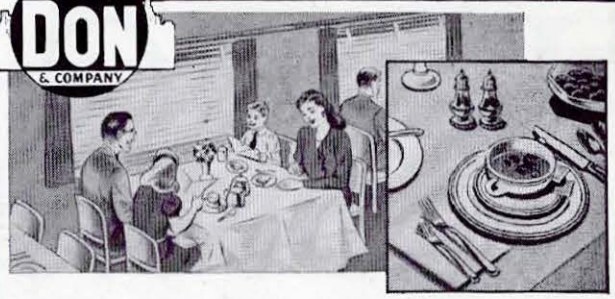


TABLE SETTINGS SET THE SCENE FOR TRAVELERS' DINING PLEASURE

Making mealtime on your train a real occasion—an adventure in enjoyment—wins life-long friends for your road! Handsome service adds extra enjoyment to delicious food—pleases passengers every time!

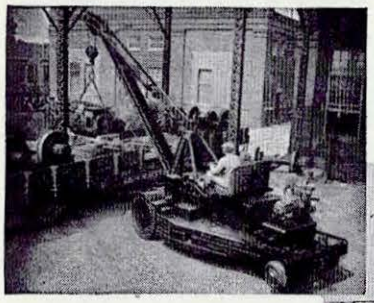
Depend on DON for the many Food Service Supplies that make your table settings more attractive . . . invite passenger praise. Among them, such famous-for-quality service accessories as Hall China, Libbey Glassware, cutlery by International Silver, Rosemary Linen.

DON Food Preparation Supplies in your kitchen are an assurance of more delicious food . . . prepared in less time with less labor. DON has just about everything to aid your staff . . . from a grinder to a grater.

Edward Don & Company welcomes the opportunity to bid on Dining Car Equipment for your road.

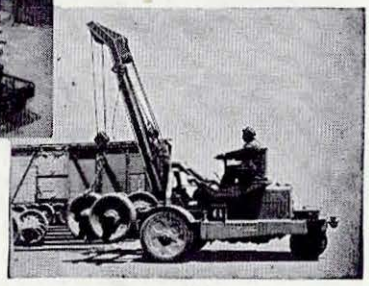
EDWARD DON & COMPANY
2201 S. LaSalle St. • Dept. 17 • Chicago 16, Ill.

COMPLETE MATERIALS HANDLING SERVICE for RAILROADS . . . *All Needs, All Applications*



RAIL-O-ROAD KRANE KAR
For ON and OFF the Tracks

Equipped with both FLANGED wheels for service on tracks and RUBBER TIRED wheels for operation on paved or dirt road.



KRANE KAR
Swing-Boom Mobile Crane

One to 10 ton cap., 9 to 37 ft. booms or telescopic booms, solid or pneumatic rubber tires, gasoline or Diesel.

KRANE KAR lifts, transports, and spots the loads, handling them at the sides as well as at the front. Use ***KRANE KAR*** for lifting and transporting ties, frogs, switches, rails, wheels and axles . . . for rip track work . . . for maintenance of way and track repairs . . . for locomotive stalls, car repair shops and other maintenance chores . . . and for stores materials handling. Available with electric magnet and clamshell bucket. Ask for Bulletin No. 69 on ***KRANE KAR*** and Bulletin No. 68 on ***RAIL-O-ROAD KRANE KAR.***

USERS: AT&SF, CB&Q, BIG FOUR, B&O, PRR, CP, C&O, MP, CMSt.P&P, etc.

Agents in all the principal cities.

Silent Hoist & Crane Co.

847 63rd ST., BROOKLYN 20, NEW YORK

KING PRODUCTS

KING metallic packings for locomotive piston rods, valve stems and air pumps

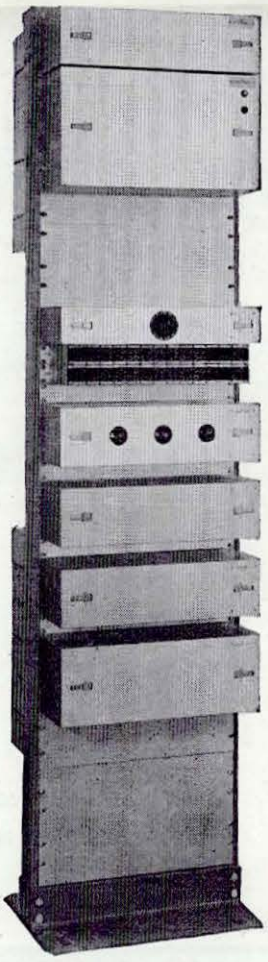
KING air pump lubricators

KING sanders

KING Red Top pressure indicator

THE UNITED STATES METALLIC PACKING CO.
PHILADELPHIA 23, PENNSYLVANIA

Representatives in Canada
Jos. Robb & Co., Ltd., Montreal



MORE CHANNELS LESS COST *Lenkurt* 32 CARRIER

Minimum maintenance and operating costs are standard features with new Lenkurt 32 carrier systems. Careful attention is given to the smallest details in design and manufacture. Lenkurt makes immediate shipment from stock in many models, rapid deliveries in all. Write for your copy of the bulletin.

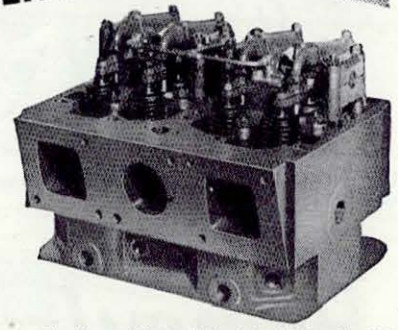
LENKURT ELECTRIC CO.
SAN CARLOS, CALIFORNIA

LENKURT Knows How

Increase Power and Fuel Economy with MOONEY Quad-Valve CYLINDER HEADS

Designed to fit the following rail car engines:

Brill Model 660
Brill Model 860
Winton Model 120
Winton Model 146
Winton Model 148



Showing a "Mooney" Head for Winton No. 120

"MOONEY" QUAD-VALVE CYLINDER HEADS provide forced water circulation directly against and around valve seats to maintain a constant temperature. This increases power and effects fuel economy. Also, a special formula metal is used which resists wear and corrosion. Reduces maintenance costs by giving you more mileage per overhaul.

Write for complete details.

AUTO ENGINE WORKS, Inc.
349 N. HAMLINE AVE. ST. PAUL, MINN.

FASTEST! EASIEST! BEST!

FOR STEEL CAR WORK!

CHAMPION Gray Devil ELECTRODES

(E 6012)

Solve your steel car welding problems with CHAMPION Gray Devil Electrodes. The Gray Devil works on either A. C. or D. C. and thoroughly penetrates rusty or greasy steel. It is an all purpose electrode that can be used with equally satisfying results by an experienced welder or a beginner.

Specially adapted to poor fit up work, the Gray Devil is a true Champion in name and in performance. Try it and be convinced.

CHAMPION Electrodes are Weld Rated Electrodes

THE CHAMPION RIVET COMPANY

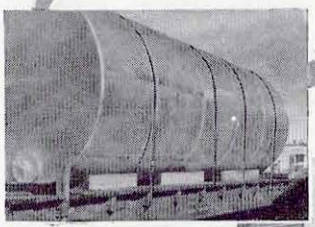
11600 HARVARD AVE. • CLEVELAND, OHIO

EAST CHICAGO, INDIANA

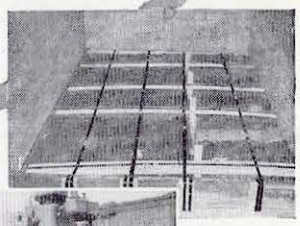
CHAMPION TRANSPORTATION SALES, INC. 222 West Adams Street, Chicago 6, Ill. *is National Railway Sales Representatives for Champion Products.*

BULKBINDER

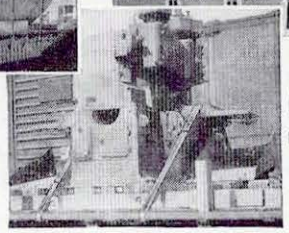
. . . makes big loads sit tight, ends claims, cuts costs



BIG TANK, Bulkbinder braced for safe transit and low cost loading and unloading.



STEEL RODS stay put till the end of a long haul, thanks to Bulkbinder bracing.



HEAVY MACHINERY, Bulkbinder bound and braced, rides a fast freight in perfect safety.

Where the load is heavy, there is no better way to assure safe arrival than to bind the product and brace the car the Bulkbinder way. The versatility of Bulkbinder Strapping Tools and the range of Bulkbinder strap and accessories give you the complete answer to all your heavy duty strapping problems. An A. J. Gerrard Strap Man will gladly discuss your problems with you. Look him up now, in your local phone directory.

BULKBINDER... strapping tool sealer

• The right combination for heavy duty strapping jobs. Sold outright, not leased.

Mail this coupon!

E

☐ Send free, Bulkbinder and Steelbinder booklets

☐ Our packing-shipping problem is (name of "problem" product)

_____

Can we use the Bulkbinder on our product?

Company Name _____

Address _____

Attention of _____

STEEL STRAPPING

485

A. J. Gerrard & Co.

221-E . LASALLE ST., CHICAGO 1, ILL.

GET TOGETHER DEPARTMENT

SPECIAL OFFERING

LOCOMOTIVES

STANDARD GAUGE

2—12-Ton, 0-4-0, Plymouth Gasoline.
1—20-Ton, 0-4-0, Whitcomb Gasoline.
1—20-Ton, 0-4-0, Davenport Gasoline.
1—44-Ton, 360 H.P. G.E. Diesel-Electric, New 1940, ICC Condition, 4 Motor Drive Caterpillar Engines T/E 27280 lbs.
1—45-Ton, G.E. Diesel-Electric.
2—45-Ton, Plymouth Diesel-Electric.
1—65-Ton, Atlas Diesel-Electric.
1—65-Ton Vulcan, 400 H.P., 0-4-4-0, Diesel-Electric, New 1941, T. E. 39,000 lbs.
1—83-Ton, 2-6-2, Saddle Tank, Oil-Fired Steam. A REAL BUY.
1—87-Ton, 600 H.P. Diesel-Electric, Twin Unit Type. Can Be Operated As 2 Units 87-Ton, Or As 2 Separate 43½-Ton Units.

In Good Operating Condition

Available for immediate delivery

IRON & STEEL PRODUCTS, INC.

New York Office
120 Liberty St.
New York 6, N. Y.
Beekman 3-8230

43 Years' Experience

General Office
13486 S. Brainard Ave.
Chicago 33, Ill.
Bayport 3456

"ANYTHING containing IRON or STEEL"

FREIGHT CARS

4—Gondola, Steel, 70-Ton, 46-Ft.
18—Gondola, Steel, 50-Ton, 41 Ft.
4—Gondola, Composite, 50-Ton, 48-Ft.
25—Hopper, Twin, Steel, 50-Ton.
2—Hopper, Covered, 30-Ton, Equipped with Fuller-Type Outlet Valves.
34—Box, 40-Ton, 40 Ft., Single Sheathed.
10—Caboose, 8-Wheel, Steel Sills.
10—Box, 50-Ton, 40 Ft., Single Sheathed.
7—Box, 50-Ton, 50-Ft. All Steel.
18—Ore Hopper Cars, Steel, Cross Dump, 50-Ton.
17—Flat, 40- and 50-Ton, 33- to 48-Ft.
8—Flat, 40-Ton, 60-Ft.
9—Flat, 50-Ton, 58-Ft.
1—Tank, 3665 Gals., Class II, Non-Coiled.
4—Tank, Class II, 8,000-Gals., Non-Coiled.
2—Tank, Class II, 10,000 Gals.
2—Tank, Class II, 8,000 Gals., Coiled.
42—Dump, 20-Yd. Automatic Air.
31—Dump, 30-Yd., Automatic Air.

Available for immediate delivery

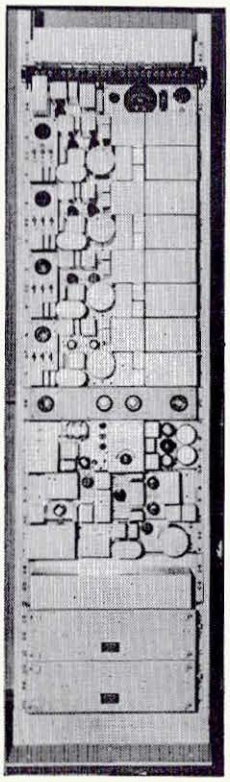
IRON & STEEL PRODUCTS, INC.

New York Office
120 Liberty St.
New York 6, N. Y.
Beekman 3-8230

43 Years' Experience

General Office
13486 S. Brainard Ave.
Chicago 33, Ill.
Bayport 3456

"ANYTHING containing IRON or STEEL"



FOR SALE
CARRIER TELEPHONE & TELEGRAPH EQUIPMENT

Four channel carrier telephone terminal with pilot regulating channel pictured at left.

WESTERN ELECTRIC CF2-B 4-channel V.F. telegraph terminals. WESTERN ELECTRIC 3-channel V.F. telegraph terminals (packaged).

ALSO

WESTERN ELECTRIC EE101-A 2-channel and EE100-A single channel V.F. ringers. Limited quantity of H1 single channel terminals and repeaters.

For further information
WRITE

RAILWAY COMMUNICATIONS, Inc.
P. O. Box 1783, Lincoln, Nebr.
In Mexico
COMERCIAL ELECTRICA, S. A.
Avenida Emilio Carranza 36 Sabinas, Coahuila, Mexico

FOR SALE

1—Brill gas-elec. combination rail motor car
2—45-ton G.E. 300 HP diesel electric locomotives

Thomas F. Carey Co., Inc.
120 Liberty Street
New York 6, N. Y.

POSITION OPEN

CIVIL ENGINEER experienced in Railroad Construction, Estimating and Layout Designing with Mid-Western Contractor. Good opportunity. Write giving full details of Experience, Age, Availability and Salary Desired. Address Box 930, RAILWAY AGE, 105 West Adams St., Chicago 3, Ill.

Steel Storage Tanks

3—74,000 BBL. CAP. RIVETED
2—10,000 BBL. CAP. BOLTED
1— 5,000 BBL. CAP. BOLTED
6—10,000 & 12,000 GAL. CAP. HORIZ.

DARIEN CORP.
60 E. 42nd St., N. Y. 17, N. Y.

POSITION OPEN

WANTED a man for position of Superintendent of a 90-mile shortline railroad located in the South. Prefer a man who has had considerable experience in managing operation of a shortline railroad. Address Box 925, RAILWAY AGE, 30 Church St., New York 7, N. Y.

FOR SALE or LEASE

Camp Car Outfit, 80 Man Capacity: 5 Bunk Cars Complete with Bedding

Shower Car
2 Dining Cars

Kitchen Car Completely Equipped wtih Electric Ice Box

Combination Office & Commissary Car

Tool Car

All Cars Wired for City & Portable Current. Unit Ready for Immediate Use and Interchange Requirements Guaranteed.

Write — Phone — Wire

HYMAN-MICHAELS COMPANY
122 S. Michigan Avenue
Chicago 3, Illinois
Wabash 4911

Educational Services for RAILROAD MEN

Our New Service
on
Diesel Locomotive
Operation
is highly recommended
for
Engineers and Firemen

The Railway Educational Bureau
Omaha 2, Nebraska

POSITION WANTED

"Former Operating Officer with 44 years experience, would like employment by Short Lines, either special duty or permanent. Full details of experience, etc., upon request."

Address Box 886,
30 Church St., New York 7, N.Y.

BUY
BONDS

FOR
INDEX
TO
ADVERTISERS
SEE LAST
WHITE PAGE

KEEP
BUYING
BONDS

Advertisers

IN THIS ISSUE

A

Air Reduction Sales Co. 10
Aluminum Company of America 42, 43
American Air Filter Co. 32
American Arch Company, Inc. 209
American Bridge Company 39
American Car and Foundry Co. ..35 to 38 incl.
American Hair & Felt Co. 92
American Institute of Bolt, Nut & Rivet Manufacturers 16, 17
American Locomotive Co. 80, 81
American Railway Car Institute, The 4, 5
American Steel Foundries 73
American Steel & Wire Company 106, 107
American Welding & Manufacturing Co., The, Amweld Railway Equipment Div. 48
Angelina County Lumber Co. 309
Association of American Railroads ..Front Cover
Atchison, Topeka & Santa Fe Railway System, The .....237 to 240 incl.
Atlanta & St. Andrews Bay Ry. 304
Atlantic Coast Line Railroad 228, 229
Auto Engine Works 312

B

Baldwin Locomotive Works, The 12, 13
Baltimore & Ohio 253
Bangor & Aroostook Railroad 236
Barco Manufacturing Co. 14
Bessemer & Lake Erie Railroad Co. 247
Bethlehem Steel Company 79
Boston & Maine Railroad 246
Buckeye Steel Castings Co., The 33
Burlington Railroad 270, 271

C

Canadian Cardwell Co., Ltd. 19
Canadian National Railways 251
Canadian Pacific Railroad Co. 230
Cardwell-Westinghouse Co. 19
Carey Co., Thomas F. 314
Carnegie-Illinois Steel Corp. 106, 107
Central of Georgia Railway 269
Champion Rivet Company, The 313
Chapman Chemical Company 18
Cherry Rivet Company 20
Chesapeake & Ohio Lines 248
Chicago, Burlington & Quincy Railroad..270, 271
Chicago Great Western Railway 266, 267
Chicago, Indianapolis & Louisville Railway Company 232, 233
Chicago & North Western System 300
Chicago Railway Equipment Co. 103
Chicago Railway Supply Co. 306
Chicago Rock Island Lines 262, 263
Classified Advertisements 314
Colorado Fuel & Iron Corp., The 70
Columbia Steel Co. 39, 106, 107
Cummins Diesel Railroad Equipment Co., Inc. 108

D

Darien Corp. 314
Davenport Locomotive Works, A Division of Davenport Besler Corp. 96
Dayton Rubber 93
Dearborn Railway Specialty Company 308
Delaware & Hudson Railroad, The 272, 273
Delaware, Lackawanna & Western 254, 255
Denver & Rio Grande Western Railroad.... 265
Diebold, Inc. 72
Differential Steel Car Company 310
Dixie Cup Company 109
Don & Company, Edward 311
Duluth, Missabe & Iron Range Railway 288, 289
Duryea Corporation, O. C. 66, 67

E

Edgewater Steel Company 11
Edwards Co., Inc., The O. M. 110
Electric Industrial Truck Association, The .. 29
Electric Storage Battery Company, The .. 21
Electric Tamper & Equipment Co. 82
Electro-Motive Division, General Motors Corp. .....55 to 62 incl.
Elgin, Joliet & Eastern Railway Co. ...234, 235
Elwell-Parker Electric Company, The 34
Equipment Specialties Division of Union Asbestos & Rubber Company 76
Erie Railroad 250
Ex-Cell-O Corporation 306

F

Fafnir Bearing Company, The 53
Fairbanks, Morse & Co. 115
Flannery Bolt Company 94, 95
Flintkote Company, The 114
Franklin Railway Supply Co., Inc. 207
Frisco Lines 303

G

Gardner-Denver Company 24
General Electric Company 80, 81
General Steel Castings 111
Get-Together Department 314
Gerrard & Co., A. J. 313
Gould Storage Battery Corp. 116
Graver Tank & Mfg. Co., Inc. 99
Graybar Electric Company 216
Great Lakes Steel Corporation 119
Great Northern Railway 214, 220, 224
Green Bay & Western Railroad 281
Greenville Steel Car Company 117

H

Holland Company, The 89
Hooven, Owens, Rentschler Co. 205
Hotel Mayfair 311
Hunt-Spiller Manufacturing Corp. 211
Hyatt Bearings Division, General Motors Corporation 128
Hydrex Felt & Asphalt Products Co. 309
Hyman-Michaels Company 314

I

Illinois Central System 286, 287
Industrial Brownhoist Corp. 25
International Business Machines Corp. 102
International Creosoting & Construction Co. 220
International Nickel Co., Inc., The 54
Iron & Steel Products, Inc. 314

J

Jersey Central Lines 258, 259
Johns-Manville 52
Joslin Mfg. Co., A D. 308

K

Kansas City Southern Lines 252
Kennedy Car Liner & Bag Co., Inc. 308
Kerite Company, The .....Inside Back Cover
Kinnear Mfg. Company, The 215
Koppers Company, Inc., Wood Preserving Division 221
Kysor Heater Company 87

L

Lackawanna Railroad 254, 255
Lamson Corporation 308
Lamson & Sessions Co., The 118
Lehigh & Hudson River Railway Co. 302
Lehigh Valley Railroad 276, 277
Lenkurt Electric Co. 312
Lima Locomotive Works Division 205
Lima Shovel & Crane Division 205
Locomotive Finished Material Co., The ..40, 41
Louisville & Nashville Railroad Co. 241
Lubri-Gas International, Inc. 23
Luria Brothers & Company, Inc. 113
Luria Engineering Corporation 311

M

Magnus Metal Corp. 22
Magor Car Corporation 8, 9
Mahon Company, The R. C. 63
Maine Central Railroad 305
McConway & Torley 124
Met-L-Wood Corporation 46, 47
Milwaukee Road, The 285
Miner, Inc., W. H. 3
Minneapolis & St. Louis Railroad 296, 297
Minneapolis, St. Paul & Sault Ste. Marie Railway Co. 226, 227
Missouri-Kansas-Texas Railroad System 278, 279
Missouri Pacific Lines 282, 283
Morton Manufacturing Company 68
Motorola Inc. 120

N

Nashville, Chattanooga & St. Louis Ry. 284
National Carbon Company, Inc. 125
National Malleable & Steel Castings Co. ..44, 45
New York Air Brake Co., The 97
New York Central System, The 260, 261
New York, Chicago & St. Louis 249
New York, Susquehanna & Western Railroad. 301
Nickel Plate Road 249
Niles Steel Products Div. 307
Norfolk Southern Railway 231
Norfolk & Western Railway 294, 295
Northern Pacific Railway 299

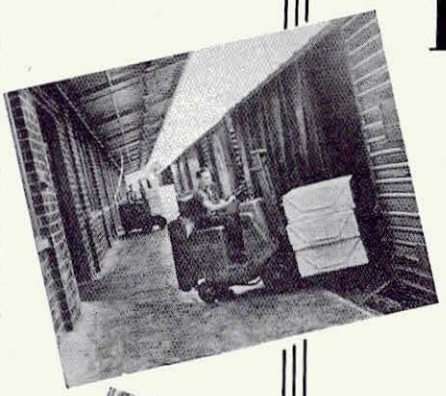
STEEL *in stock at* **RYERSON**

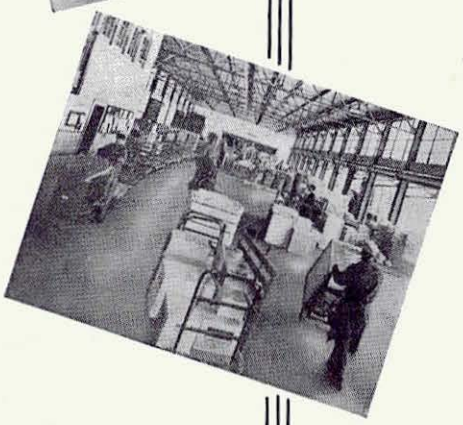
• Ryerson has the steel you need ready for immediate shipment. Twelve convenient Ryerson plants stock more than ten thousand kinds, shapes and sizes of steel and allied products. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City, Pittsburgh, Los Angeles.

Principal Products Include:

Structurals	Alloys	Mechanical Tubing	Reinforcing
Plates	Cold Finished Steel	Boiler Tubes	Nails, Rivets, etc.
Sheets	Tool-Steel	Welding Rod	Machinery
Strip	Stainless	Babbitt, Solder.	Tools

FREIGHT MOVES FASTER *and* SAFELY *over*





- SMOOTH
- TOUGH
- RESILIENT
- SPARK-PROOF
- DAMPPROOF
- WEAR-RESISTANT

All Industry Moves Safely and Surely Over Stonhard Resurfacer—All Over the World.

"Satisfaction or No Charge"
Since 1922

STONHARD RESURFACER

Ruts and holes in warehouse floors, loading platforms, and driveways *slow* down trucks and live skids. And stop-and-go trucks waste time replacing packages or crates that shift or fall off.

Anyone can simply and quickly patch or resurface your floors with STONHARD Resurfacer—without ripping up old floors or costly delays during repairs. You can have a *new* tough, smooth, wear-resistant surface over a week-end . . . or in 36 hours if necessary! Reduce accidents . . . reduce claims . . . reduce maintenance costs—use STONHARD.

STONHARD CO.

Serving the Railroads Since 1922.

881 Terminal Commerce Bldg., Philadelphia 8, Pa.

Send for a helpful Free Manual — it will help you "Over the Rough Spots".

STONHARD COMPANY
881 Terminal Commerce Bldg.,
Philadelphia 8, Pa.

Please send us a free copy of the 48 page maintenance guide "Over the Rough Spots" and information about STONHARD RESURFACER.

Railroad .....

Mr. ..... Title .....

Address .....

City ..... Zone ..... State .....

O

Ohio Locomotive Crane Co., The 310
Okonite Company, The 132
Oxweld Railroad Service Company, The 28

P

Parr Paint & Color Company, The 309
Peerless Equipment Company 50, 51
Pennsylvania Railroad 274, 275
Peoria & Pekin Union Railway Co. 305
Pilliod Company, The 309
Pittsburgh & West Virginia Railway 264
Portland Cement Company 98
Pullman-Standard Car Manufacturing Co. 83 to 86 incl.
Pyle-National Company, The 49

Q

Quaker Rubber Products 26

R

Rail Joint Company, Inc., The 74
Railway Communications, Inc. 314
Railway Educational Bureau 314
Railway Express Agency, Inc. 292
Ralston Steel Car Company 307
Reading Railway System 244, 245
Ready-Power Co., The 217
Republic Steel Corporation 307
Richmond, Fredericksburg & Potomac Railroad 225
Rock Island Lines 262, 263
Ryerson & Son, Inc., Joseph T. 315

S

Scullin Steel Co. 127
Seaboard Air Line Railroad Co. 298
Silent Hoist & Crane Co. 312
Simmons-Boardman Publishing Corp. ..304, 310
SKF Industries, Inc. 6, 7
Snyder Tool & Engineering Company 31
Soo Line 226, 227
Southern Pacific Lines 290, 291
Southern Pine Lumber Company 214
Southern Railway System 280
Southern Wood Preserving Company 30
Spring Packing Corporation 90
Standard Car Truck Company 27
Standard Railway Equipment Mfg. Co. 104, 105
Standard Register Company, The 88
Standard Stoker Co., Inc., The 121
St. Louis-San Francisco Ry. 303
St. Louis Southwestern Ry. Lines 242, 243
Stonhard Company 316
Superior Car Door Company 69
Symington-Gould Corp., The 15

T

Tennessee Coal, Iron & Railroad Co. ..106, 107
Terminal Railroad Association of St. Louis 293
Texas Company, The 213
Texas & Pacific Railway, The 256
Timken Roller Bearing Co., The ...Back Cover
Towmotor Corporation 223

U

Union Asbestos & Rubber Company, Equipment Specialties Division 76
Union Carbide & Carbon Corporation ...28, 125
Union Switch & Signal Co. 130
Unit Truck Corporation 2
U. S. Metallic Packing Co., The 312
United States Steel Export Co. 39, 106, 107
United States Steel Supply Corp. ..39, 106, 107

V

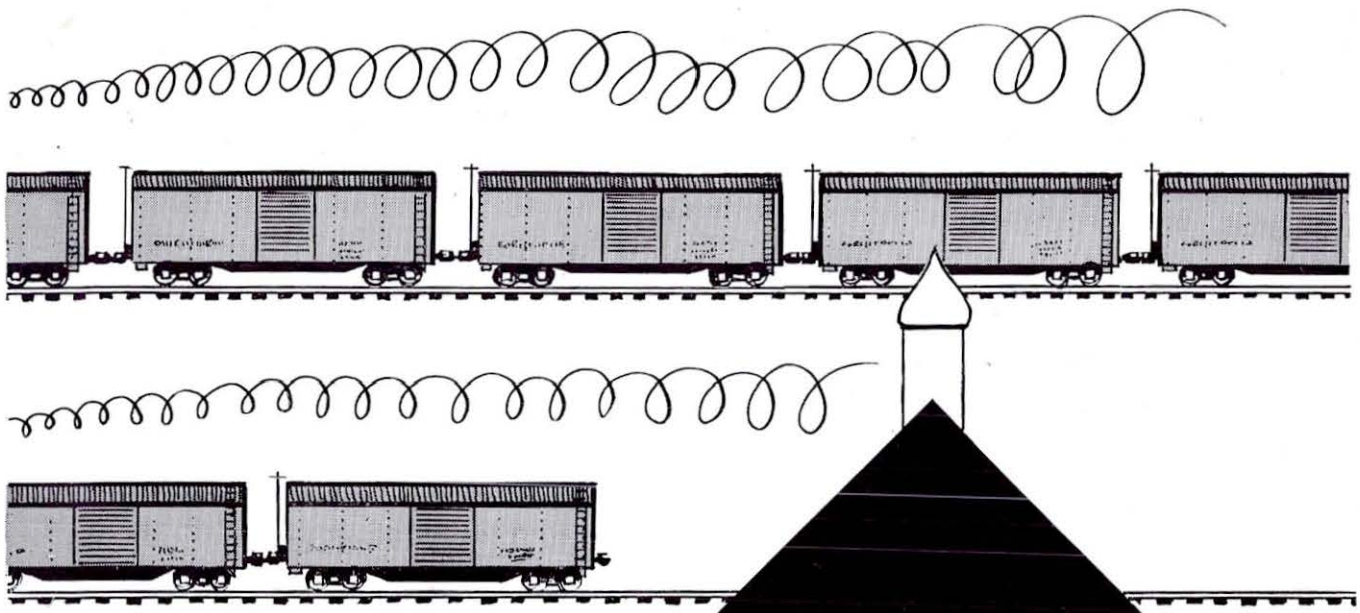
Vanadium Corporation of America 77
Van Der Horst Corporation of America ... 91
Virginian Railway, The 257
Vulcan Iron Works 75

W

Wabash Railroad 268
Watson-Stillman 65
Waugh Equipment Company 122, 123
Webster Electric Company 310
Western Railroad Supply Co. 126
Westinghouse Air Brake Company 218, 219
Westinghouse Electric Corporation 100, 101
Whitcomb Locomotive Co., The 78
Willson Products, Inc. 222
Witco Chemical Company 112
Wood Preserving Division, Koppers Co., Inc. 221

Y

Yale & Towne Mfg. Co., The 71
Youngstown Sheet and Tube Co., The 64



More Traffic Per Track-Mile With C-T-C

CONTINUED shortages of materials for freight cars, continued heavy demands on freight handling facilities, mounting prices—all make Centralized Traffic Control more important than ever before in solving freight handling problems and reducing costs. ***C-T-C can speed up schedules an average of one hour for every 60 miles of C-T-C track!***

Kerite cable—extensively used for all types of railway signalling installations — is ideal for C-T-C. Its extra-long life and dependability mean *low cost per year*. Kerite cable more than half a century old is still in service . . . still in excellent condition, mechanically and electrically. Kerite is equipped to solve *your* cable problem. The Kerite Company, 30 Church Street, New York 7, N. Y.

Offices also at: 122 S. Michigan Avenue, Chicago 3; 582 Market Street, San Francisco 4; 714 W. Olympic Blvd., Los Angeles 15.

Kerite Insulation—
Your Cable's Best Life Insurance

DAYS KERITE

KERITE CABLE

Progress Report on Roller Freight

Orders received for Timken Bearings for freight cars since January 1, 1947, definitely show the upward swing to roller freight on American railroads.

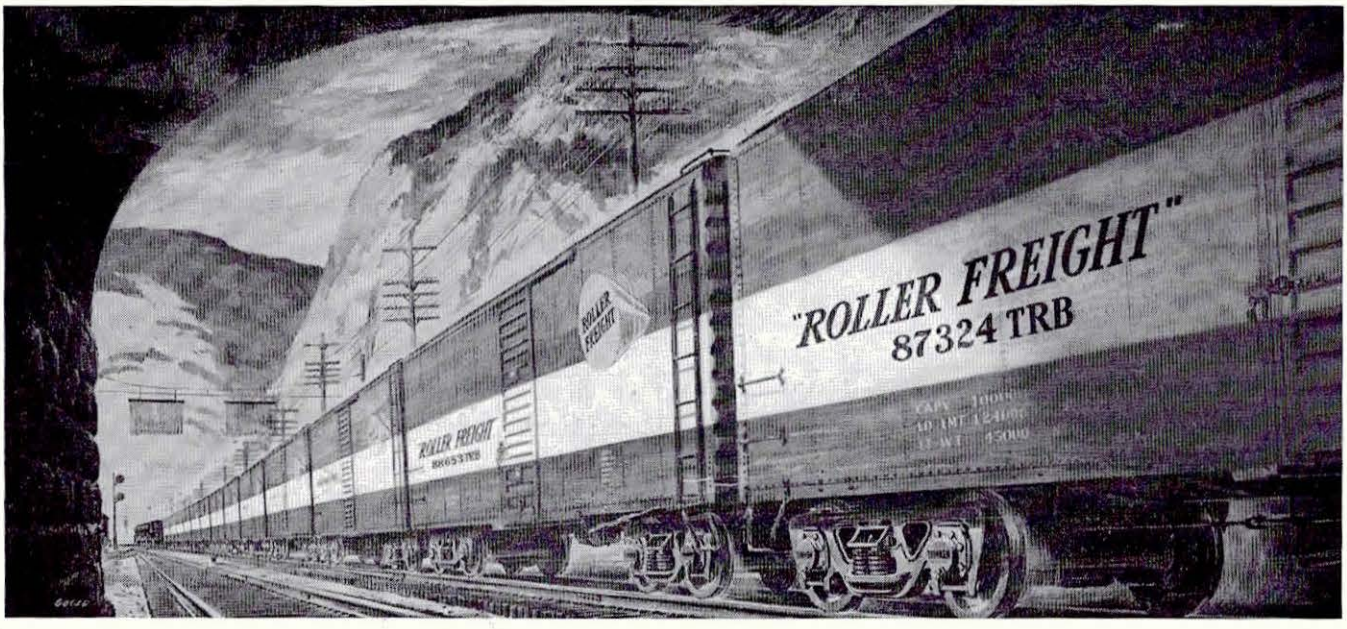
Far greater progress has been made in this direction during the period referred to than at any previous time, proving that railroad executives are becoming more and more alert to the immediate advantages and future possibilities of freight traffic operating on roller bearings.

Already two great railroads have emphasized their faith in the future of roller freight; one with an order for 1,000 Timken Bearing Equipped hopper cars, the other with an order for 800 livestock dispatch cars likewise equipped with Timken Bearings.

Yes, the era of roller freight on American railroads is off to a flying start! Don't be left behind.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO - CABLE ADDRESS "TIMROSCO"



NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⓪ AND THRUST →⓪← LOADS OR ANY COMBINATION